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# *Virginia's Licensed Dental Hygienist Workforce: 2012*

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Healthcare Workforce Data Center

November 2012

Virginia Department of Health Professions  
Healthcare Workforce Data Center  
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## Healthcare Workforce Data Center

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### Overview

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The Virginia Department of Health Profession's Healthcare Workforce Data Center (HWDC) collects and disseminates workforce information on Virginia's licensed healthcare practitioners. The 2007 report of the Governor's Health Reform Commission recommended that the HWDC be established within the Department of Health Professions (DHP) due to its existing repository of licensure information for over 80 professions. In the spring of 2008, HWDC was launched with Workforce Investment Act grant funding and continues with support from the Department and shared grant funding from the U.S. Health Resources Services Administration on behalf of the Virginia Health Workforce Development Authority and other partner organizations.

With significant input and collaborative effort from key stakeholders and experts, HWDC has developed initial supply and demand forecasts for physicians and nurses, published results from existing physician and nursing workforce surveys originally developed by the Board of Medicine and Board of Nursing, updated and launched revised surveys as well as developed new workforce surveys as listed in the "Current Collection" in the HWDC Survey Timetable below. Beginning in 2012, HWDC began development of audiology & speech language pathology surveys and long term care administrator surveys which are poised for rollout later this fiscal year.

### HWDC Survey Timetable

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| In Current Collection:   | Proposed:   |
|--|---|
| Medical Doctors<br>Doctors of Osteopathy<br>Registered Nurses and<br>Licensed Practical Nurses<br>Certified Nurse Aides<br>Physician Assistants<br>Nurse Practitioners<br>Licensed Professional Counselors<br>Clinical Psychologists<br>Licensed Clinical Social Workers | Pharmacists<br>Pharmacy Technicians<br>Dentists<br>Dental Hygienists<br>Speech-Language Pathologists<br>Audiologists<br>Long-Term Care Administrators<br>Physical Therapists<br>Physical Therapy Assistants<br><br>Occupational Therapists<br>Occupational Therapy Assistants |

## The 2012 Dental Hygienist Workforce Survey

### Methodology

The Dental Hygienist Workforce Survey is administered to licensed dental hygienists through the Department of Health Professions' online renewal process. The Board of Dentistry has an annual renewal cycle, with licenses expiring March 31 of each year. Currently, HWDC surveys are only available to those renewing their licenses online. New Virginia licensees and those returning from a long absence did not have access to the online survey.<sup>1</sup> Additionally, paper renewals were available. The survey was not offered to students or new applicants. This survey was conducted during the 2012 renewal period ending March 31, 2012. The survey text is available in Appendix C. Since practitioners renew annually, we ask them to describe their experiences over the previous 12-month period. We refer to this as the survey period.

### Response Rates

| Statistic                                       | Licensed Dental Hygienists |
|---|----------------------------|
| Renewing Practitioners, 2011                    | 5,105                      |
| Licensees, 2011 Renewal Cycle                   | 5,270                      |
| Completed Surveys                               | 4,483                      |
| Proportion of licensees who completed a survey. | 85%                        |
| Response Rate, Renewing Practitioners           | 88%                        |

The survey's population is all licensed dental hygienists in Virginia during the renewal cycle. From this population, we are particularly interested in those who worked or were available to work in Virginia: Virginia's Dental Hygienist Workforce. Our sample is a convenience sample of licensed professionals who renewed their licenses and chose to renew online. This method, along with the voluntary efforts of practitioners, results in a very high overall response rate (see above).

The methodology excludes dental hygienists first licensed in the Commonwealth in 2012, as these practitioners were not required to renew until the next renewal cycle. It excludes dental hygienists who did not renew their licenses. The methodology also excludes practitioners who choose to renew using paper renewals. These practitioners may be older, less technologically savvy or lack access to high speed internet (e.g., rural practitioners). Using administrative data in our licensee files, we are able to determine response rates based on age and the metro status of the practitioner's mailing address with the Department.

| Statistic                 | Non Respondents | Respondent  | Response Rate (licensees) |
|---------------------------|-----------------|-------------|---------------------------|
| <b>By Age</b>             |                 |             |                           |
| Under 30                  | 108             | 732         | 87%                       |
| 30 to 34                  | 80              | 566         | 88%                       |
| 35 to 39                  | 94              | 589         | 86%                       |
| 40 to 44                  | 84              | 635         | 88%                       |
| 45 to 49                  | 100             | 606         | 86%                       |
| 50 to 54                  | 107             | 576         | 84%                       |
| 55 to 59                  | 76              | 468         | 86%                       |
| 60 to 64                  | 81              | 219         | 73%                       |
| 65 to 69                  | 38              | 70          | 65%                       |
| 70 to 74                  | 17              | 17          | 50%                       |
| 75 to 79                  | 2               | 4           | 67%                       |
| 80+                       | 0               | 1           | 100%                      |
| <b>Total</b>              | <b>787</b>      | <b>4483</b> | <b>71.5%</b>              |
| <b>New Licenses, 2012</b> |                 |             |                           |
| License Issued in 2012    | 41              | 0           | 0%                        |
| <b>Metro Status</b>       |                 |             |                           |
| Non-Metro                 | 56              | 442         | 89%                       |
| Metro                     | 520             | 3,294       | 86%                       |
| Not in Virginia           | 211             | 747         | 78%                       |

<sup>1</sup> Military personnel may renew within 60 days of returning from an overseas deployment, as long as renewal occurs within five years of license expiration. All others must renew licenses annually.

## Virginia's Licensed Dental Hygienists

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Not all of Virginia's licensed practitioners live or work in the state. Out-of-state practitioners maintain licenses in-state for a variety of reasons. Those serving in the military or working for the federal government may choose to maintain a license, but they may do so in any state. Retired practitioners may maintain their licenses for prestige or occasional practice. Practitioners may occasionally travel to Virginia to work, particularly those practicing in Virginia's border jurisdictions.

About 82 percent of Virginia's licensed dental hygienists have mailing addresses in Virginia, and 8 percent have mailing addresses in a state bordering Virginia or the District of Columbia. Of those who reported a primary work location on our surveys, only 534, or 15 percent, listed a primary work location outside of Virginia. Of these, 153 were in a state bordering Virginia or the District of Columbia.

## Virginia's Dental Hygienist Workforce

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Virginia's workforce consists of respondents who reported having at least one practice location and who identified at least one practice location in Virginia during the survey period. If a respondent indicated practicing but did not list a location, mailing address was used as a proxy to determine participation in Virginia's workforce. Virginia's workforce also includes those who reside in Virginia and did not work over the survey period but who intend to return to practice at some point. Those familiar with federal data should note that this is a broader measure than the Bureau of Labor Statistics' civilian labor force which includes only those who are employed or those who are actively seeking work and excludes those in the military. Using these criteria, 3,534 respondents participated in Virginia's workforce during the survey period.

| Status   | Respondents  |
|--|--------------|
| Working in Virginia                                  | 3,284        |
| Not working, but plans to return to work in Virginia | 250          |
| <b>Total</b>   | <b>3,534</b> |

## Weighted Estimates

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To account for differences in response rates by key characteristics, this report uses weighted estimates. The HWDC assigns a weight to each response based on the overall response rate of dental hygienists based on the age of the respondent in five year categories and the rural status of the respondent's mailing address.

For the latter, the HWDC uses a measure of rurality developed by the US Department of Agriculture known as the Rural-Urban Continuum Code. More information on these codes is available on the USDA website here: <http://www.ers.usda.gov/Briefing/Rurality/RuralUrbCon/>. Response rates may vary on other important characteristics such as race/ethnicity, gender, specialty or worksite characteristics. However, the HWDC does not have population-wide data on these characteristics to generate response rates and weights. For information on weights, see Appendix A. Due to the rounding of weighted data in HWDC's statistical software, weighting may result in some minor anomalies in tables and other presented data (e.g., data may not add to totals in tables).

| Status   | Weighted Estimate |
|--|-------------------|
| Working in Virginia                                  | 3,802             |
| Not working, but plans to return to work in Virginia | 296               |
| <b>Total</b>   | <b>4,098</b>      |

Using this methodology, we estimate there were 4,098 dental hygienists in Virginia's Dentistry Workforce, including 3,802 licensed dental hygienists who worked in Virginia during the survey period and 296 licensed dental hygienists who did not indicate working in Virginia during the survey period but who indicated plans to return to work in Virginia in the future.

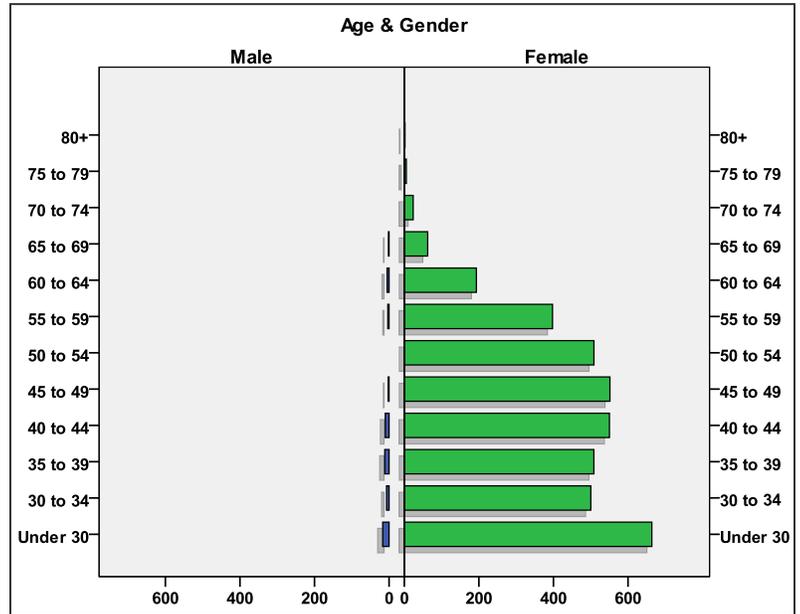
# Virginia's Dental Hygienist Workforce

## Demographics

### Age & Gender

As of Dec. 31, 2011, the median age of Virginia's dental hygienists was 42. Nearly 35 percent of dental hygienists were under the age of 35, and more than 80 percent were under the age of 55.

Unlike dentists, the vast majority of dental hygienists were female. In total, more than 98 percent of all dental hygienists were female. There were only 58 male dental hygienists, more than 60 percent of whom were under the age of 40.



### Diversity<sup>2</sup>

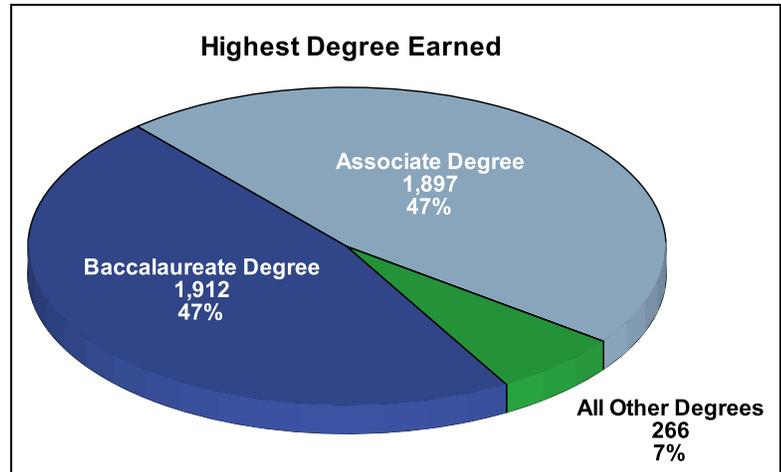
Among all dental hygienists, 85 percent identify as non-Hispanic white and 5 percent identify as Asian or Pacific Islander. All other groups are underrepresented compared to Virginia's overall population. Among dental hygienists under age 40, 79 percent are non-Hispanic white and nine percent are Asian. Despite making slight proportional gains, all other groups remain underrepresented.

| Race/ Ethnicity                   | Est. 2011 Virginia Population |     | Dental Hygienists |     | Hygienists under age 40 |     |
|-----------------------------------|-------------------------------|-----|-------------------|-----|-------------------------|-----|
|                                   | Estimate                      | %   | Weighted Estimate | %   | Weighted Estimate       | %   |
| Hispanic of any race              | 660,730                       | 8%  | 127               | 3%  | 69                      | 4%  |
| White, non-Hispanic               | 5,222,122                     | 64% | 3,308             | 85% | 1,305                   | 79% |
| Black, non-Hispanic               | 1,548,069                     | 19% | 159               | 4%  | 86                      | 5%  |
| American Indian or Alaskan Native | 21,474                        | 0%  | 8                 | 0%  | 3                       | 0%  |
| Asian or Pacific Islander         | 463,913                       | 6%  | 203               | 5%  | 145                     | 9%  |
| Other Race                        | -                             | -   | 2                 | 0%  | 2                       | 0%  |
| Two or more races                 | 180,296                       | 2%  | 66                | 2%  | 38                      | 2%  |

<sup>2</sup> All Healthcare Workforce Data Surveys follow Federal OMB standards for data collection on race and ethnicity. This allows valid comparisons with data collected by the US Census Bureau and other sources. For more information on these standards see: [http://www.whitehouse.gov/omb/infoereg\\_statpolicy](http://www.whitehouse.gov/omb/infoereg_statpolicy).

## Education

Dental hygienists were evenly split between associate and baccalaureate degrees. In total, more than 90 percent of all dental hygienists earned one of those two degrees as their highest degree. Among the remaining 7 percent of dental hygienists whose highest degree was not an associate or baccalaureate degree, a majority earned a masters degree.



## Metro Status of Childhood

A slight majority of dental hygienists spent most of their childhood in suburban areas. However, a third characterized their childhood as rural, with only 13 percent having spent their childhoods in urban areas. The HWDC includes this question to examine whether practitioners who grew up in urban, suburban or rural areas are likely to work in these areas in their professional lives. We compared rural status of childhood location with the rural status of the practitioner's primary practice location. Statistical tests do indicate that a rural childhood correlates with rural practice and vice versa.<sup>3</sup> Additionally, the effect appears to be moderately important. A clear majority of dental hygienists practicing in nonmetro counties had rural childhoods. Nevertheless, almost 80 percent of dental hygienists with a rural childhood have primary practice locations in metro localities.

| Primary Location:<br>USDA Rural Urban Continuum |                                    | Rural Status of Childhood Location |          |       |
|---|------------------------------------|------------------------------------|----------|-------|
| Code*   |                                    | Rural                              | Suburban | Urban |
| <b>Metro Counties</b>                           |                                    |                                    |          |       |
| 1   | Metro, 1 million+                  | 24%                                | 62%      | 15%   |
| 2   | Metro, 250,000 to 1 million        | 41%                                | 43%      | 16%   |
| 3   | Metro, 250,000 or less             | 56%                                | 33%      | 11%   |
| <b>Nonmetro Counties</b>                        |                                    |                                    |          |       |
| 4   | Urban pop 20,000+, Metro adj       | 70%                                | 24%      | 7%    |
| 6   | Urban pop, 2,500-19,999, Metro adj | 77%                                | 16%      | 7%    |
| 7   | Urban pop, 2,500-19,999, nonadj    | 75%                                | 19%      | 5%    |
| 8   | Rural, Metro adj                   | 62%                                | 28%      | 10%   |
| 9   | Rural, nonadj                      | 71%                                | 29%      | 0%    |
|   | Overall                            | 33%                                | 53%      | 13%   |

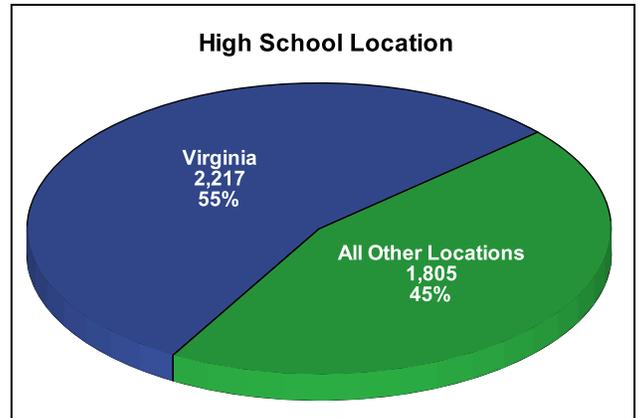
\*None of Virginia's counties are rated Code 5: Urban Pop 20,000+, nonadj. See [www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx](http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx) for information on USDA Rural-Urban Continuum Codes.

<sup>3</sup> Spearman's Rho is .306, significant at the .000 level. Somer's D, with Rural Status of Primary Practice Location as the dependent variable, is .246, also significant at the .000 level. Dental Hygienists with a primary location outside of Virginia were excluded from this analysis. Since cases were weighted based on rural-urban continuum of mailing addresses, we also ran this test without weights and attained almost identical results.

## High School Location

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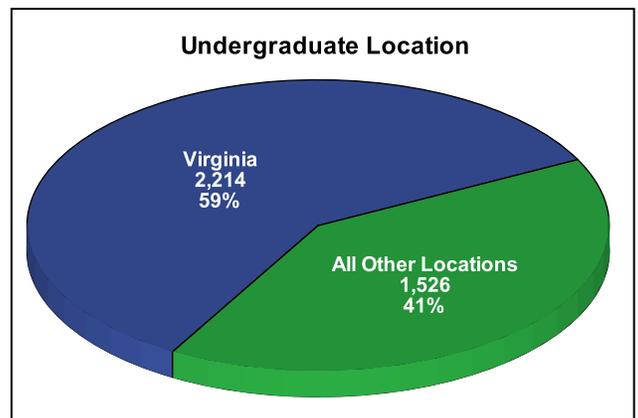
A majority of all dental hygienists went to high school in Virginia. Although 45 percent of all dental hygienists did go to high school outside of Virginia, no other locations was cited by more than five percent of respondents.



## Undergraduate Location

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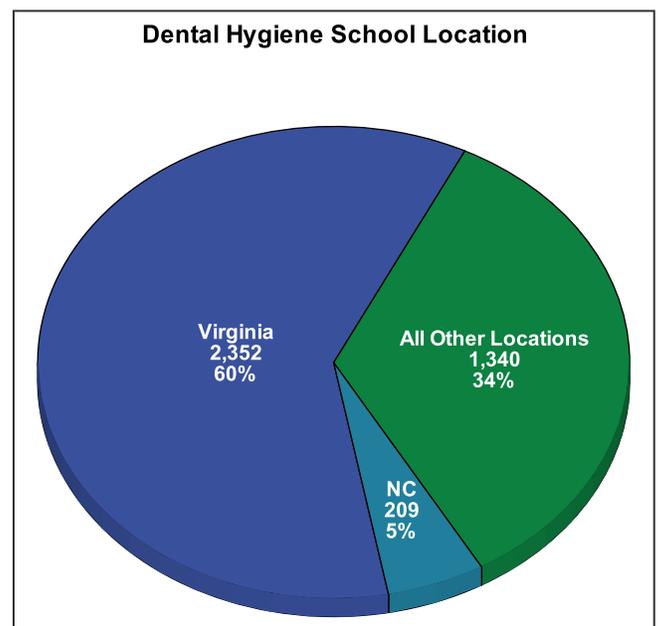
Almost 60 percent of all dental hygienists attended an undergraduate institution in Virginia. No other location was cited by more than five percent of all dental hygienists.



## Dental Hygiene School Location

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Just over 60 percent of all dental hygienists completed their dental hygiene degree in Virginia. Another five percent completed their degree in North Carolina. No other location was cited by more than five percent of all dental hygienists.



## Location Overview

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Over 99 percent of dental hygienists completed either high school or dental hygiene school in Virginia, and over 70 percent completed both in Virginia.

## Employment Characteristics

### Number of Work Locations

| Dental Hygienists |                   |     |
|-------------------|-------------------|-----|
| Locations         | Weighted Estimate | %   |
| 0                 | 296               | 7%  |
| 1                 | 3,090             | 75% |
| 2                 | 427               | 10% |
| 3 +               | 284               | 7%  |
| Average*          | 1.26              |     |

\*Those with at least one location. 3+ locations is counted as 3.

Survey respondents provided detailed information on up to two work locations where the respondent worked during the 12 months prior to the survey, and estimates of weekly hours worked at any additional work locations.

Approximately three-quarters of all dental hygienists work in one location. In addition, 17 percent of dental hygienists work at more than one location. Seven percent of dental hygienists are currently unemployed.

### Distribution of Work Locations

The HWDC uses the eight regions defined by the Council of Virginia's Future to give a general idea of how Virginia's dental hygienist workforce is distributed across the state (for information on COVF regions see the *Virginia Performs* website: <http://vaperforms.virginia.gov/extras/regions.php>). To get a better sense of the geographic distribution of dental hygienists, see the Map section on page 24.

With respect to primary work locations, only 18 dental hygienists worked primarily outside the state of Virginia during the survey period. Among those with a primary work location inside the Commonwealth, nearly one-third worked in Northern Virginia. In addition, one-quarter of all dental hygienists worked in the Hampton Roads region, and nearly 30 percent worked in either Central Virginia or West Central Virginia.

With respect to secondary work locations, 95 percent of all dental hygienists worked inside the state of Virginia. The distribution of work locations within the Commonwealth was similar to the distribution among primary work locations. More than one-third of all dental hygienists with a secondary work location worked in Northern Virginia. Meanwhile, more than one-fifth worked in Hampton Roads, and more than one-quarter worked in either Central Virginia or West Central Virginia.

| COVF Region        | Dental Hygienists     |             |                         |             |
|--------------------|-----------------------|-------------|-------------------------|-------------|
|                    | Primary Work Location |             | Secondary Work Location |             |
|                    | Weighted Estimate     | %           | Weighted Estimate       | %           |
| Central            | 667                   | 18%         | 120                     | 18%         |
| Eastern            | 40                    | 1%          | 9                       | 1%          |
| Hampton Roads      | 897                   | 25%         | 140                     | 21%         |
| Northern           | 1,153                 | 32%         | 233                     | 35%         |
| Southside          | 115                   | 3%          | 15                      | 2%          |
| Southwest          | 153                   | 4%          | 15                      | 2%          |
| Valley             | 180                   | 5%          | 20                      | 3%          |
| West Central       | 357                   | 10%         | 54                      | 8%          |
| Several Localities | 40                    | 1%          | 31                      | 5%          |
| <b>Virginia</b>    | <b>3,602</b>          | <b>100%</b> | <b>637</b>              | <b>95%</b>  |
| Border State/DC    | 8                     | 0%          | 14                      | 2%          |
| Other US State     | 10                    | 0%          | 17                      | 3%          |
| Outside of the US  | 0                     | 0%          | 4                       | 1%          |
| <b>Total</b>       | <b>3,619</b>          | <b>100%</b> | <b>673</b>              | <b>100%</b> |

## Establishment Type

Among dental hygienists who had a primary work location, more than 90 percent practiced in a private solo or group practice. Another three percent practiced in government agencies, while two percent practiced at a dental or dental hygiene school.

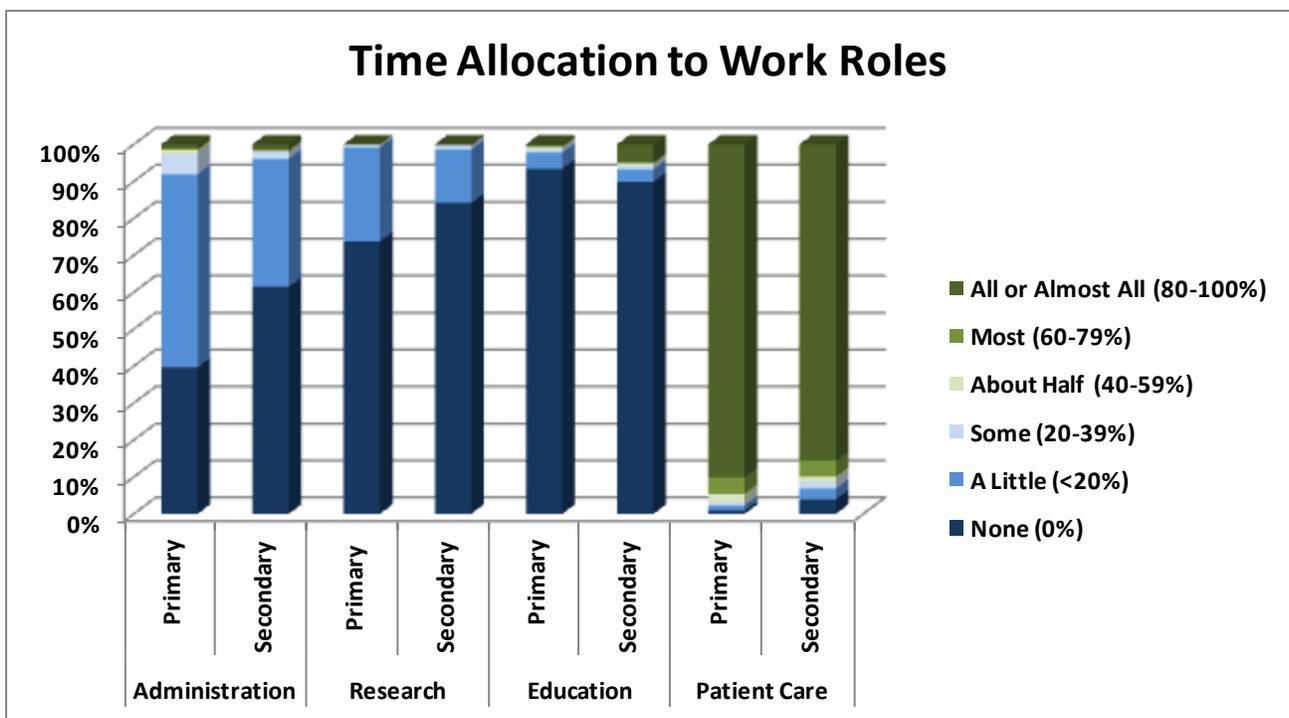
Secondary work locations exhibited a similar pattern. In total, 85 percent of dental hygienists with a secondary work location practiced in private practices. Additionally, seven percent of dental hygienists with a secondary work location practiced at a dental school, while two percent practiced with a government agency.

| Establishment Type                            | Primary Work Location |               | Secondary Work Location |               |
|---|-----------------------|---------------|-------------------------|---------------|
|   | Weighted Estimate     | %             | Weighted Estimate       | %             |
| Private Solo Practice                         | 2,195                 | 51%           | 419                     | 55%           |
| Private Group Practice                        | 1,752                 | 41%           | 226                     | 30%           |
| Dental/Dental Hygiene School                  | 90                    | 2%            | 50                      | 7%            |
| Federal Government Service                    | 87                    | 2%            | 6                       | 1%            |
| Other   | 56                    | 1%            | 19                      | 2%            |
| Non-Profit/Safety Net Clinic                  | 40                    | 1%            | 16                      | 2%            |
| Local/State Government Agency                 | 40                    | 1%            | 10                      | 1%            |
| Hospital/Health Service                       | 31                    | 1%            | 1                       | 0%            |
| K-12 School or Non-Dental College             | 12                    | 0%            | 7                       | 1%            |
| Nursing Home/Long-Term Care                   | 7                     | 0%            | 5                       | 1%            |
| Insurance Company                             | 2                     | 0%            | 1                       | 0%            |
| Supplier Company                              | 1                     | 0%            | 2                       | 0%            |
| <b>Total</b>                                  | <b>4,313</b>          | <b>100.0%</b> | <b>763</b>              | <b>100.0%</b> |
| Item Missing (Have location, did not respond) | 178                   |               | 68                      |               |
| Total with Location                           | 4,491                 |               | 831                     |               |
| Ineligible (Do not have location)             | 779                   |               | 4,439                   |               |

## Work Roles

The survey asked respondents to report the percentage of time spent working in each of six roles at their primary work location, as well as an “other” category. Proper analysis of these questions requires valid combined responses for all of the roles. With respect to primary work locations, we obtained valid responses for 2,966 of Virginia’s dental hygienists (weighted), excluding those without a primary work location. With respect to secondary work locations, we obtained valid responses for 509 of Virginia’s dental hygienists (weighted), excluding those without a secondary work location.

In both primary and secondary work locations, dental hygienists spent almost all of their time on patient care. In total, 90 percent of dental hygienists with a primary work location and 85 percent of dental hygienists with a secondary work location spent at least 80 percent of their time in a patient care role. More than 70 percent of all dental hygienists spent no time in either a research or education role in both primary and secondary work locations. Meanwhile, the vast majority of dental hygienists in both primary and secondary work locations spent at most 20 percent of their time in an administration role.



## Primary Care Visits

A majority of dental hygienists with a primary work location saw between 25 and 50 patients per week. In addition, one-quarter of dental hygienists saw between one and 25 patients per week. Only two percent of all dental hygienists saw at least 100 patients per week.

With respect to dental hygienists with a secondary work location, nearly three-quarters saw between one and 25 patients per week. Another 12 percent of dental hygienists saw between 25 and 50 patients per week. Just like dental hygienists with a primary work location, only two percent of dental hygienists with a secondary location saw more than 100 patients per week.

| Patient Care Visits | Patient Care Visits   |             |                         |             |
|---------------------|-----------------------|-------------|-------------------------|-------------|
|                     | Primary Work Location |             | Secondary Work Location |             |
|                     | Weighted Estimate     | %           | Weighted Estimate       | %           |
| 0 Visits            | 180                   | 5%          | 85                      | 12%         |
| 1-24 Visits         | 957                   | 25%         | 514                     | 72%         |
| 25-49 Visits        | 2,211                 | 58%         | 82                      | 12%         |
| 50-74 Visits        | 336                   | 9%          | 16                      | 2%          |
| 75-99 Visits        | 53                    | 1%          | 6                       | 1%          |
| 100-124 Visits      | 27                    | 1%          | 4                       | 1%          |
| 125-149 Visits      | 12                    | 0%          | 0                       | 0%          |
| 150-174 Visits      | 6                     | 0%          | 1                       | 0%          |
| 175-199 Visits      | 2                     | 0%          | 0                       | 0%          |
| 200+ Visits         | 19                    | 1%          | 3                       | 1%          |
| <b>Total</b>        | <b>3,802</b>          | <b>100%</b> | <b>711</b>              | <b>100%</b> |

## Reasons for Unemployment

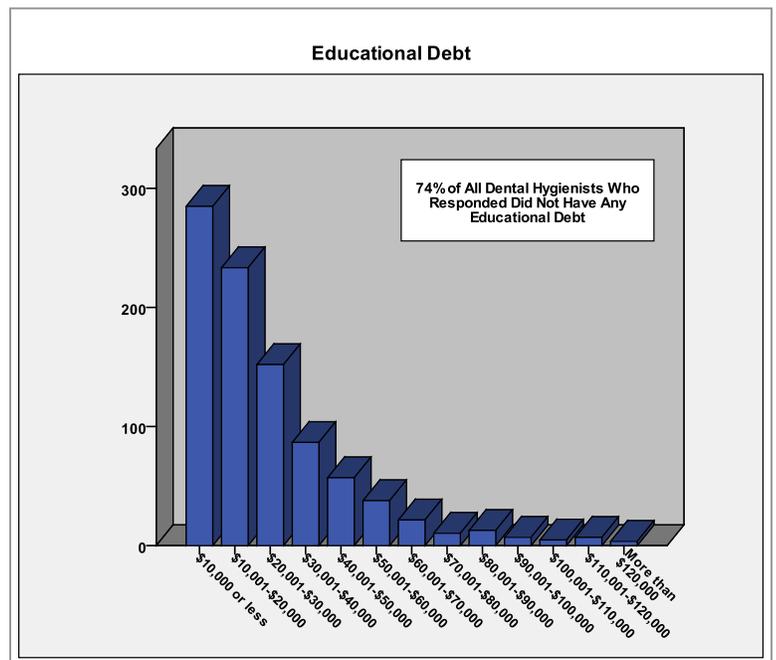
A total of 296 dental hygienists did not work in Virginia during the survey period. Of these, 217 reported at least one reason for their unemployment over the past year. Note that dental hygienists could include multiple reasons in the survey. Voluntary unemployment was the most common reason for not participating in the workforce, cited by 56 dental hygienists. Meanwhile, 31 percent decided to change professions, while nearly one-quarter chose to engage in either charity or consulting work of some kind. However, nearly one-quarter of dental hygienists who did not work during the survey period experienced involuntary unemployment.

| Reason for Unemployment  | Weighted Estimate | % of Unemployed |
|--------------------------|-------------------|-----------------|
| Voluntary Unemployment   | 122               | 56%             |
| Changed Professions      | 67                | 31%             |
| Charity/Consulting       | 52                | 24%             |
| Involuntary Unemployment | 50                | 23%             |
| Non-Dentistry Education  | 23                | 11%             |
| Retired                  | 12                | 5%              |

## Dental Hygienist Finances

### Educational Debt

Nearly three-fourths of dental hygienists did not report having any educational debt. Among those who did have educational debt, nearly three-quarters owed less than \$30,000. Most of the remainder owed less than \$100,000; only two percent of dental hygienists owed more than \$100,000 in educational debt.



### Benefits

In total, 2,636 dental hygienists reported receiving benefits in addition to their salaries/wages.<sup>4</sup> This represents 64% of all dental hygienists in the survey and 69% of those who worked over the survey period. Among those dental hygienists who did receive benefits, 65 percent received paid vacation, and 30 percent received health insurance. In addition, 37 percent received paid sick leave. Less than one-fifth received dental insurance or paid disability leave.

| Benefits              | Weighted Estimate | % of working Dental Hygienists |
|-----------------------|-------------------|--------------------------------|
| Paid Vacation         | 2,487             | 65%                            |
| Paid Sick Leave       | 1,406             | 37%                            |
| Health Insurance      | 1,128             | 30%                            |
| Dental Insurance      | 502               | 13%                            |
| Paid Disability Leave | 279               | 7%                             |
| Any benefit           | 2,636             | 69%                            |

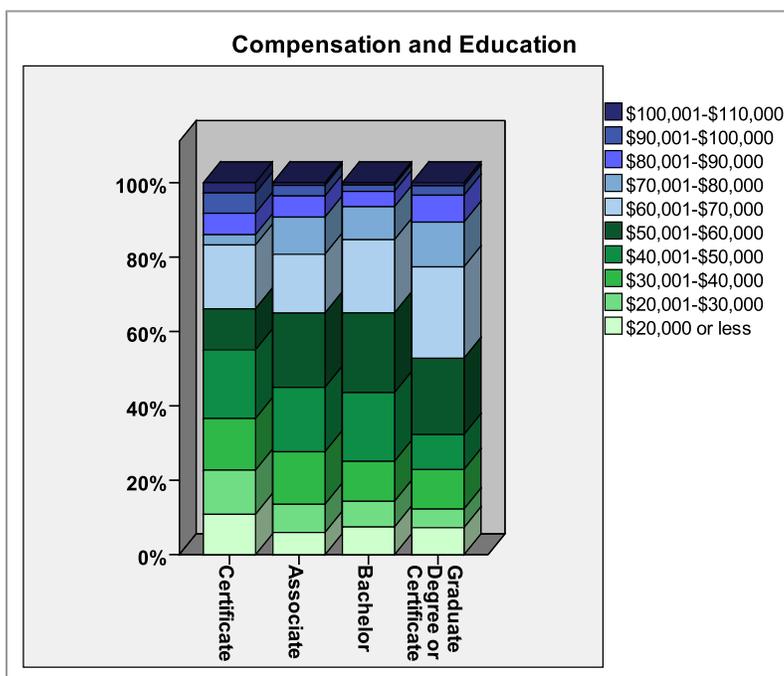
<sup>4</sup> Note that dentists could select multiple entries for benefits.

## Compensation

Approximately two-thirds of all dental hygienists earned between \$30,000 and \$70,000 per year. Meanwhile, more than 20 percent either volunteered or earned less than \$30,000 per year, while only one percent of dental hygienists earned more than \$100,000 per year. The median income of dental hygienists was \$50,001-\$60,000 per year.

| Annual Salary                     | Weighted Estimate        | Percent     |
|-----------------------------------|--------------------------|-------------|
| Volunteer work only               | 22                       | 1%          |
| Less than \$20,000                | 212                      | 7%          |
| \$20,001-\$30,000                 | 225                      | 7%          |
| \$30,001-\$40,000                 | 387                      | 12%         |
| \$40,001-\$50,000                 | 549                      | 17%         |
| \$50,001-\$60,000                 | 644                      | 20%         |
| \$60,001-\$70,000                 | 565                      | 18%         |
| \$70,001-\$80,000                 | 296                      | 9%          |
| \$80,001-\$90,000                 | 156                      | 5%          |
| \$90,001-\$100,000                | 72                       | 2%          |
| \$100,001-\$110,000               | 22                       | 1%          |
| \$110,001-\$120,000               | 9                        | 0%          |
| \$120,001-\$130,000               | 3                        | 0%          |
| \$130,001-\$140,000               | 0                        | 0%          |
| \$140,001-\$150,000               | 3                        | 0%          |
| More than \$150,000               | 1                        | 0%          |
| <b>Total</b>                      | <b>3,169</b>             | <b>100%</b> |
| Missing                           | 929                      |             |
| <b>Median Excluding Volunteer</b> | <b>\$50,001-\$60,000</b> |             |

## Compensation and Education



Although dental hygienists with graduate degrees appear to have higher incomes, statistical tests failed to confirm any difference in income by educational level. In particular, incomes of those with either associates or bachelor's degrees are almost identical.

## Wages & Work Location

The next few sections examine wages by work location. The Dental Hygienist Workforce Survey does not collect wage information for each reported work location. Rather, we ask respondents to provide estimated hourly earnings across work settings. We use respondents' primary work location to assign responses to the categories listed on the following pages. This may result in some misassignment for those with secondary work locations. To ameliorate this effect, we combined smaller response sets into broader categories. Tables in this section combine the highest wage categories due to the low number of dental hygienists in these categories in a few instances.

### Regional Compensation

Statistical tests indicate that compensation varies widely by Council on Virginia's Future Regions.<sup>5</sup> Median annual salaries range from \$30,000 to \$40,000 in Southwest Virginia to \$60,000 to \$70,000 in Northern Virginia. Dental hygienists in Central, Hampton Roads and Valley regions enjoy median salaries of \$50,000 to \$60,000, while those in Easter, Southside and West Central regions have a median salary range of \$40,000 to \$50,000.

| Annual Compensation       | Central                  | Eastern                  | Hampton Roads            | Northern                 | Southside                | Southwest                | Valley                   | West Central             |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>\$20,000 or less</b>   | 7%                       | 19%                      | 7%                       | 6%                       | 11%                      | 9%                       | 4%                       | 6%                       |
| <b>\$20,001-\$30,000</b>  | 7%                       | 11%                      | 6%                       | 6%                       | 9%                       | 14%                      | 6%                       | 10%                      |
| <b>\$30,001-\$40,000</b>  | 10%                      | 17%                      | 13%                      | 8%                       | 14%                      | 30%                      | 15%                      | 17%                      |
| <b>\$40,001-\$50,000</b>  | 16%                      | 8%                       | 19%                      | 11%                      | 26%                      | 31%                      | 20%                      | 28%                      |
| <b>\$50,001-\$60,000</b>  | 24%                      | 21%                      | 24%                      | 16%                      | 30%                      | 13%                      | 23%                      | 23%                      |
| <b>\$60,001-\$70,000</b>  | 22%                      | 10%                      | 21%                      | 17%                      | 7%                       | 3%                       | 22%                      | 13%                      |
| <b>More than \$70,000</b> | 15%                      | 14%                      | 9%                       | 36%                      | 2%                       | 1%                       | 11%                      | 3%                       |
| <b>Median</b>             | <b>\$50,001-\$60,000</b> | <b>\$40,001-\$50,000</b> | <b>\$50,001-\$60,000</b> | <b>\$60,001-\$70,000</b> | <b>\$40,001-\$50,000</b> | <b>\$30,001-\$40,000</b> | <b>\$50,001-\$60,000</b> | <b>\$40,001-\$50,000</b> |

<sup>5</sup> Using the Kruskal-Wallis test,  $\chi^2=236.823$  (n=2631, df=7) and is significant at the .000 level. Mean ranks were: Central = 1353.90, Eastern = 1018.53, Hampton Roads = 1240.57, Northern = 1578.58, Southside = 973.96, Southwest = 739.63, Valley = 1282.97 and West Central = 1041.10.

## Compensation along the Rural-Urban Continuum

The US Department of Agriculture’s Economic Research Service Rural-Urban Continuum codes classify localities by their metro status, the size of their urban or town populations and by their adjacency to metro areas. The Continuum scale ranges from “1” to “9”, with a 1 representing a metro locality in an urban area with a population of at least one million and nine representing “completely rural” counties.<sup>6</sup> This classification allows us to examine the influence of metro status on salaries at a finer scale.

Statistical tests indicated that annual compensation does vary across various rural and urban areas, with those in rural areas tending to earn less than those in urban areas.<sup>7</sup> However, the effect appears to be small. With the exception of nonadjacent rural areas, median incomes hovered in the \$40,000 to \$60,000 range. Regional differences in salaries appear to have more of an affect than rural status.

| Annual Compensation       | Metro, 1 million+        | Metro, 250,000 to 1 million | Metro, 250,000 or less   | Urban pop 20,000+, Metro adj | Urban pop, 2,500-19,999, Metro adj | Urban pop, 2,500-19,999, nonadj | Rural, Metro adj         | Rural, nonadj            |
|---------------------------|--------------------------|-----------------------------|--------------------------|------------------------------|------------------------------------|---------------------------------|--------------------------|--------------------------|
| <b>\$20,000 or less</b>   | 6%                       | 6%                          | 6%                       | 8%                           | 6%                                 | 11%                             | 22%                      | 16%                      |
| <b>\$20,001-\$30,000</b>  | 6%                       | 10%                         | 7%                       | 8%                           | 11%                                | 19%                             | 4%                       | 13%                      |
| <b>\$30,001-\$40,000</b>  | 10%                      | 18%                         | 15%                      | 12%                          | 27%                                | 18%                             | 14%                      | 38%                      |
| <b>\$40,001-\$50,000</b>  | 15%                      | 31%                         | 23%                      | 18%                          | 23%                                | 20%                             | 19%                      | 5%                       |
| <b>\$50,001-\$60,000</b>  | 20%                      | 25%                         | 23%                      | 31%                          | 19%                                | 23%                             | 18%                      | 19%                      |
| <b>\$60,001-\$70,000</b>  | 20%                      | 9%                          | 16%                      | 17%                          | 8%                                 | 7%                              | 5%                       | 5%                       |
| <b>More than \$70,000</b> | 22%                      | 1%                          | 10%                      | 5%                           | 7%                                 | 2%                              | 18%                      | 5%                       |
| <b>Median</b>             | <b>\$50,001-\$60,000</b> | <b>\$40,001-\$50,000</b>    | <b>\$40,001-\$50,000</b> | <b>\$50,001-\$60,000</b>     | <b>\$40,001-\$50,000</b>           | <b>\$40,001-\$50,000</b>        | <b>\$40,001-\$50,000</b> | <b>\$30,001-\$40,000</b> |

<sup>6</sup> Additional information on the rural-urban continuum codes is available on the USDA Economic Research Service’s *Rural Classifications* website: <http://www.ers.usda.gov/topics/rural-economy-population/rural-classifications.aspx>.

<sup>7</sup> Somers’ d, with annual compensation as the dependent variable, is -0.235, and is significant at the 0.000 level. Non-directional measures of association are also significant at the 0.000, including Kendall’s Tau-c (-0.123) and Spearman’s Rho (-0.202).

## Work Hours

The Dental Hygienists Workforce Survey asked respondents to estimate the average weekly hours provided at any primary and secondary work location and the number of weeks worked at each location in the past twelve months. As with all surveys and particularly online surveys, responses suffered from some item-missing data. For the variables in this section, there were less than two percent missing data for primary locations and less than six percent for secondary locations. To get a more complete look at the supply of dental hygienists missing data was imputed on these variables. Although these changes had little effect on aggregate descriptive statistics, they may have a larger effect on estimates when examining small groups (e.g., estimates for rural counties or for specific establishment types.) Details of our methodology appear in Appendix B.

The tables on this page show the results of the imputation. Respondents were asked to provide average hours for the weeks worked at each location. Note, respondents reported individual work locations rather than employers. Nearly half of all dental hygienists with a primary location worked 50 or more weeks per year. In addition another 30 percent worked between 45 and 49 weeks per year. In total, three-quarters of all dental hygienists worked at least 45 weeks per year at their primary location. With respect to secondary locations, nearly one-third of dental hygienists worked less than 15 weeks per year. However, one-third of dental hygienists also worked more than 44 weeks per year, including one-fifth of dental hygienists who worked at least 50 weeks per year.

As for average hours worked per week, nearly half of dental hygienists worked between 30 and 40 hours per week at their primary work location. Another one-quarter also worked between 20 and 30 hours per week. Very few dental hygienists worked more than 50 hours per week. With respect to secondary work locations, more than half worked less than 10 hours per week. In addition, another 29 percent worked between 10 and 20 hours per week. Essentially all dental hygienists with a secondary work location worked less than 50 hours per week.

| Weeks Worked       | Primary Location  |             | Secondary Location |             |
|--------------------|-------------------|-------------|--------------------|-------------|
|                    | Weighted Estimate | %           | Weighted Estimate  | %           |
| Less than 10 Weeks | 131               | 3%          | 149                | 21%         |
| 10-14 Weeks        | 77                | 2%          | 75                 | 11%         |
| 15-19 Weeks        | 63                | 2%          | 36                 | 5%          |
| 20-24 weeks        | 115               | 3%          | 58                 | 8%          |
| 25-29 weeks        | 114               | 3%          | 45                 | 6%          |
| 30-34 weeks        | 109               | 3%          | 35                 | 5%          |
| 35-39 weeks        | 122               | 3%          | 26                 | 4%          |
| 40-44 weeks        | 245               | 6%          | 44                 | 6%          |
| 45-49 Weeks        | 1,095             | 29%         | 85                 | 12%         |
| 50 or More Weeks   | 1,735             | 46%         | 153                | 22%         |
| <b>Total</b>       | <b>3802</b>       | <b>100%</b> | <b>706</b>         | <b>100%</b> |
| Ineligible         | 296               |             | 3,386              |             |

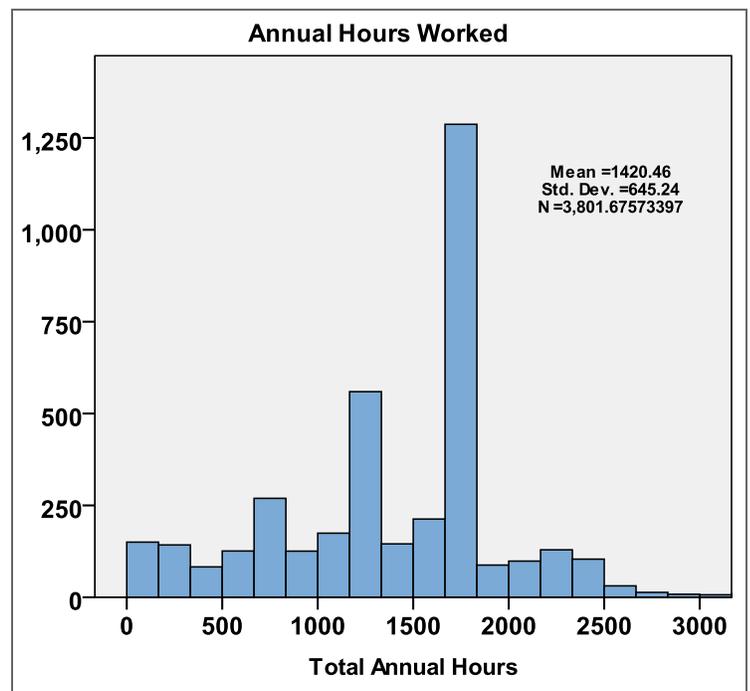
hours for the weeks worked at each location. Note,

| Ave. Hours per Week Worked | Primary Location |             | Secondary Location |             |
|----------------------------|------------------|-------------|--------------------|-------------|
|                            | Frequency        | %           | Frequency          | %           |
| 1 to 9 hours               | 190              | 5%          | 417                | 59%         |
| 10 to 19 hours             | 447              | 12%         | 188                | 27%         |
| 20 to 29 hours             | 913              | 24%         | 43                 | 6%          |
| 30 to 39 hours             | 1,850            | 49%         | 44                 | 6%          |
| 40 to 49 hours             | 342              | 9%          | 13                 | 2%          |
| 50 to 59 hours             | 21               | 1%          | 0                  | 0%          |
| 60 to 69 hours             | 12               | 0%          | 0                  | 0%          |
| 70 to 79 hours             | 20               | 1%          | 1                  | 0%          |
| 80 or more hours           | 8                | 0%          | 0                  | 0%          |
| <b>Total</b>               | <b>3,802</b>     | <b>100%</b> | <b>706</b>         | <b>100%</b> |
| Ineligible                 | 296              |             | 3,386              |             |

## Total Hours

According to our estimates, a total of 3,802 Virginia dental hygienists worked an average of 1,420 hours in 2012, which amounts to over 5.4 million man-hours of labor. The average of 1,420 hours is equivalent to about 36 weeks at 40 hours per week, or 50 weeks at 28 hours per week. The median is 1,610 hours, or approximately 32 hours per week over 50 weeks.

The distribution is skewed towards lower hours, with a quarter of hygienists working 1,040 or fewer hours in 2012, the equivalent of 26 weeks at 40 hours per week or 21 hours a week over 50 weeks. Meanwhile, one-quarter of dental hygienists worked more than 1,785 hours in 2012, which equates to 36 hours per week over 50 weeks.



## Work Hours and Age

| Age        | Total Annual Hours |        |
|------------|--------------------|--------|
|            | Mean               | Median |
| Under 30   | 1,362              | 1,470  |
| 30 to 34   | 1,460              | 1,645  |
| 35 to 39   | 1,433              | 1,575  |
| 40 to 44   | 1,449              | 1,680  |
| 45 to 49   | 1,477              | 1,680  |
| 50 to 54   | 1,452              | 1,680  |
| 55 to 59   | 1,408              | 1,610  |
| 60 or over | 1,275              | 1,250  |

Statistical tests indicated that there was no effect of age on work hours.<sup>8</sup> For all age groups between 30 and 54, the average number of annual hours worked is approximately 1,450 hours per year. For these groups, the mean is lower than the median, which indicates that many dental hygienists in these age groups are working a low number of hours in the year.

## Work Hours and Gender

Due to the low number of male dental hygienists, we were unable to explore the affect of gender on work hours. On average the 46 males who worked during the survey period worked 1,386 hours over the survey period, while the 3,237 females worked 1,421 hours.<sup>9</sup> However, statistical tests did not confirm any difference in hours worked when controlled for age.

<sup>8</sup> Somers' d value of 0.008 and Kendall's tau-c value of 0.007.

<sup>9</sup> The 519 dental hygienists for whom we do not have information on gender worked an average of 1,416 hours per week.

## Full Time Equivalency Units (FTEs)

Economists and human resources professionals often refer to Full Time Equivalency units (or FTEs) when discussing labor market participation. Conceptually, an FTE represents one full-time worker or one full-time position. One FTE may be provided by two part-time workers or one full-time worker. Alternatively, one worker with one full-time job and one part-time job may provide 1.5 FTEs. FTEs provide an easy way to compare labor or job supply while accounting for differing levels of work supplied by individuals.

FTEs are defined using a variety of methods. Human resources professionals (and employees) often think in terms of positions or jobs, with one full-time position equivalent to one FTE and one part-time position equivalent to 0.5 FTEs. Economists (and payroll professionals), however, often need more precise measures of hours worked. Economists often use hours worked (as we did in the previous section). Using FTEs, however, provides a human scale for examining data and provides for easy benchmarking across data sources.

When using FTEs, readers are cautioned to look closely at how FTEs are defined. Does FTE refer to positions, or is it derived from hours worked (or some other measure of services provided, such as medications dispensed)? How many hours equates to one FTE? Unless defined equivalently, direct comparisons of FTEs require caution. In many cases, direct comparisons are not appropriate. The HWDC defines one FTE as 2,000 hours worked per year. That equates to someone working 40-hours per week for 50 weeks (2-weeks off).<sup>10</sup> Other common methods, such as a full 52 week schedule, or a 35-hour work week can be calculated using the HWDC's raw hour figures.

FTEs by age, along with the FTE per individual in the age group, are reported in the table above. The distribution (proportion by age group) is equivalent to the distribution by hour. All told, Virginia's dental hygienists worked approximately 2,700 FTEs at their primary and secondary locations in 2012, or about 0.71 FTEs per dental hygienist. FTEs are reported alongside hours in the following charts and in the map section beginning on page 24.

| Age          | Total FTEs  |              |
|--------------|-------------|--------------|
|              | Mean        | Sum          |
| Under 30     | 0.68        | 452          |
| 30 to 34     | 0.73        | 339          |
| 35 to 39     | 0.72        | 346          |
| 40 to 44     | 0.72        | 379          |
| 45 to 49     | 0.74        | 383          |
| 50 to 54     | 0.73        | 354          |
| 55 to 59     | 0.70        | 269          |
| 60 and over  | 0.64        | 178          |
| <b>Total</b> | <b>0.71</b> | <b>2,700</b> |

<sup>10</sup> There does not seem to be a common method for estimating FTEs. The method described here is used by the US Bureau of Labor Statistics when calculating accident rates in the workforce. Readers should note that previous reports of FTEs by the HWDC referred to positions, not a derivation of hours worked, usually by asking directly whether employees worked full-time or part-time. Since HWDC surveys are not monthly "snapshot" surveys this method caused some confusion. The dental hygienist survey, for instance, occurs annually, with practitioners generally renewing in March. Practitioners report their activities for the prior 12 month period and work participation can change drastically over this time period.

## Work Hours and Type of Establishment

More than 90 percent of all work hours provided by dental hygienists took place in private practices. No other establishment type accounted for more than 2 percent of work hours.

| Establishment Sector                                     | Primary Location |                  | Secondary Location |                | Combined Locations |              |                              |
|--|------------------|------------------|--------------------|----------------|--------------------|--------------|------------------------------|
|  | Average Hours    | Total Hours      | Average Hours      | Total Hours    | Total              | FTEs         | Percent of all Hours (Valid) |
| <b>Private Solo Practice</b>                             | 1,287            | 2,408,323        | 327                | 115,889        | 2,524,212          | 1,262        | 49%                          |
| <b>Private Group Practice</b>                            | 1,416            | 2,152,134        | 331                | 66,990         | 2,219,124          | 1,110        | 43%                          |
| <b>Federal Government Service (Military/Peace Corps)</b> | 2,129            | 120,020          | 771                | 3,558          | 123,578            | 62           | 2%                           |
| <b>Dental/Dental Hygiene School</b>                      | 1,554            | 94,306           | 266                | 11,232         | 105,538            | 53           | 2%                           |
| <b>Other</b>   | 1,370            | 53,722           | 576                | 9,861          | 63,583             | 32           | 1%                           |
| <b>Local/State Government Agency</b>                     | 1,487            | 45,462           | 422                | 3,804          | 49,266             | 25           | 1%                           |
| <b>Hospital/Health System</b>                            | 1,397            | 40,342           | 3,900              | 4,187          | 44,528             | 22           | 1%                           |
| <b>Non-profit/safety net clinic</b>                      | 937              | 29,414           | 207                | 3,335          | 32,750             | 16           | 1%                           |
| <b>Nursing home/long term care facility</b>              | 1,386            | 9,368            | 177                | 607            | 9,975              | 5            | 0%                           |
| <b>K-12 school or non-dental college</b>                 | 990              | 8,889            | 385                | 2,162          | 11,051             | 6            | 0%                           |
| <b>Insurance Company</b>                                 | 1,361            | 3,090            | 2,340              | 3,035          | 6,125              | 3            | 0%                           |
| <b>Supplier Company</b>                                  | 1,820            | 2,094            | 417                | 974            | 3,069              | 2            | 0%                           |
| <b>Valid Total</b>                                       | -                | <b>4,967,165</b> | -                  | <b>225,633</b> | <b>5,192,798</b>   | <b>2,596</b> | <b>100%</b>                  |
| <b>Establishment Type Missing</b>                        | 1,308            | 188,354          | 408                | 18,965         | 207,319            | 104          |                              |
| <b>Total</b>   | 1,356            | 5,155,520        | 346                | 244,598        | 5,400,117          | 2,700        |                              |

## Work Hours by Location

As noted earlier, the HWDC uses the eight regions defined by the Council of Virginia’s Future to give a general idea of how Virginia’s dental hygienist workforce is distributed across the state (for information on COVF regions see the *Virginia Performs* website: <http://vaperforms.virginia.gov/extras/regions.php>). For more detailed information of the geographic distribution of dental hygienists, see the Map section on page 24.

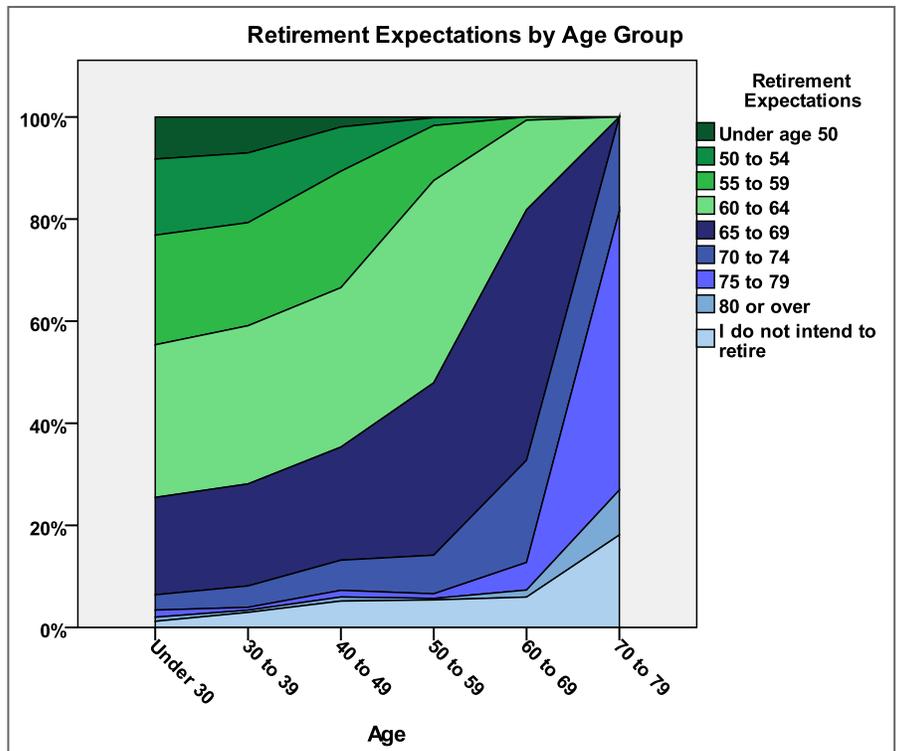
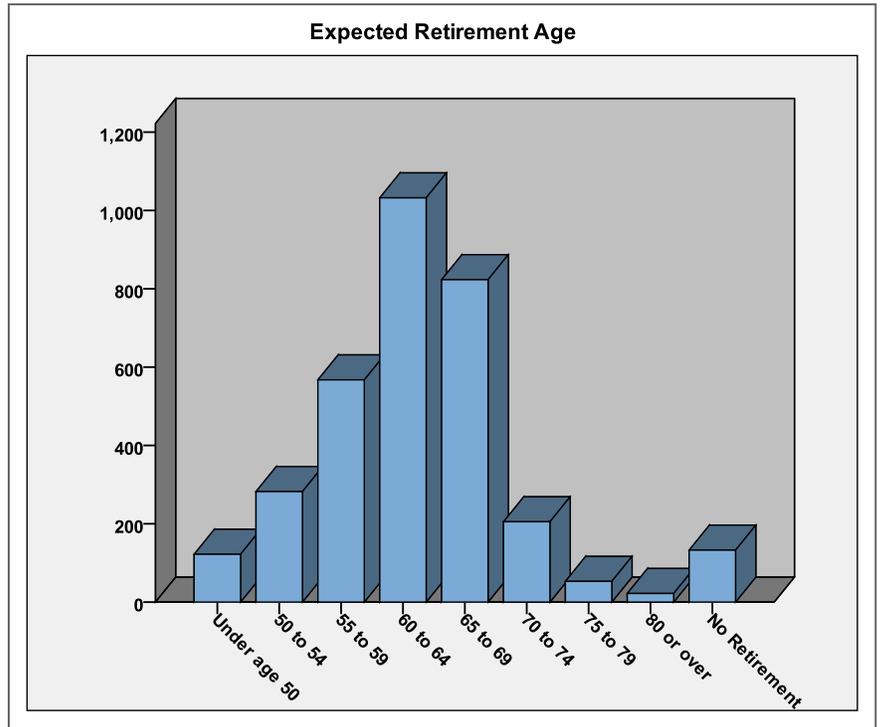
Nearly one-third of all hours worked by dental hygienists took place in Northern Virginia. In addition, another one-quarter worked in the Hampton Roads region, and nearly 30 percent worked in either Central or West Central Virginia. No other region in the Commonwealth was responsible for more than five percent of total hours worked by dental hygienists during the year. Only a negligible number of Virginia’ dental hygienist workforce worked outside the state.

| Locality  | Total Hours      |                    | Combined Locations | Combined FTEs | % of Valid Hours | % of Virginia Hours |
|---|------------------|--------------------|--------------------|---------------|------------------|---------------------|
|   | Primary Location | Secondary Location |                    |               |                  |                     |
| <b>In Virginia</b>                                |                  |                    |                    |               |                  |                     |
| Central   | 921,841          | 34,891             | 956,731            | 478           | 19%              | 19%                 |
| Eastern   | 49,100           | 3,396              | 52,496             | 26            | 1%               | 1%                  |
| Hampton Roads                                     | 1,255,943        | 46,974             | 1,302,917          | 651           | 25%              | 26%                 |
| Northern  | 1,506,464        | 72,860             | 1,579,324          | 790           | 31%              | 31%                 |
| Southside   | 155,811          | 6,239              | 162,050            | 81            | 3%               | 3%                  |
| Southwest   | 215,088          | 2,684              | 217,772            | 109           | 4%               | 4%                  |
| Valley  | 253,894          | 3,919              | 257,813            | 129           | 5%               | 5%                  |
| West Central                                      | 498,782          | 17,332             | 516,114            | 258           | 10%              | 10%                 |
| Several Localities                                | 24,960           | 8,929              | 33,889             | 17            | 1%               | 1%                  |
| <b>Virginia Total</b>                             | <b>4,881,882</b> | <b>197,223</b>     | <b>5,079,105</b>   | <b>2,540</b>  | <b>99%</b>       | <b>100%</b>         |
| <b>Outside of Virginia</b>                        |                  |                    |                    |               |                  |                     |
| Virginia Border State/DC                          | 9,357            | 2,996              | 12,353             | 6             | 0%               |                     |
| Other US State                                    | 9,374            | 9,856              | 19,231             | 10            | 0%               |                     |
| Outside of the US                                 | 0                | 1,290              | 1,290              | 1             | 0%               |                     |
| <b>Total outside Virginia</b>                     | <b>18,731</b>    | <b>14,142</b>      | <b>32,873</b>      | <b>16</b>     | <b>1%</b>        |                     |
| <b>Totals &amp; Missing</b>                       |                  |                    |                    |               |                  |                     |
| Total Valid                                       | 4,900,614        | 211,365            | 5,111,978          | 2,556         | 100%             |                     |
| Location Unknown                                  | 254,906          | 33,233             | 288,139            | 144           |                  |                     |
| <b>Total, Virginia Dental Hygienist Workforce</b> | <b>5,155,520</b> | <b>244,598</b>     | <b>5,400,117</b>   | <b>2,700</b>  |                  |                     |

Expected Retirement Age

Nearly one-third of all dental hygienists expected to retire sometime between the ages of 60 and 64. Another one-fifth of dental hygienists expect to retire between the ages of 65 and 69. Retirement expectations were skewed somewhat toward earlier ages. Whereas 30 percent of dental hygienists expected to retire before the age of 60, only 9 percent expected to retire after the age of 70. In addition, only 4 percent of dental hygienists do not intend to retire.

Retirement expectation can vary with age, so retirement expectations were also evaluated within specific age cohorts. For workers under the age of 30, 45 percent expect to retire before the age of 60, while nearly half expect to retire sometime in their 60s. Dental hygienists in their thirties and forties exhibited roughly similar retirement expectation. Meanwhile, nearly three-quarters of dental hygienists in their fifties expect to retire sometime in their sixties, and two thirds of dental hygienists in their sixties expect to do the same.



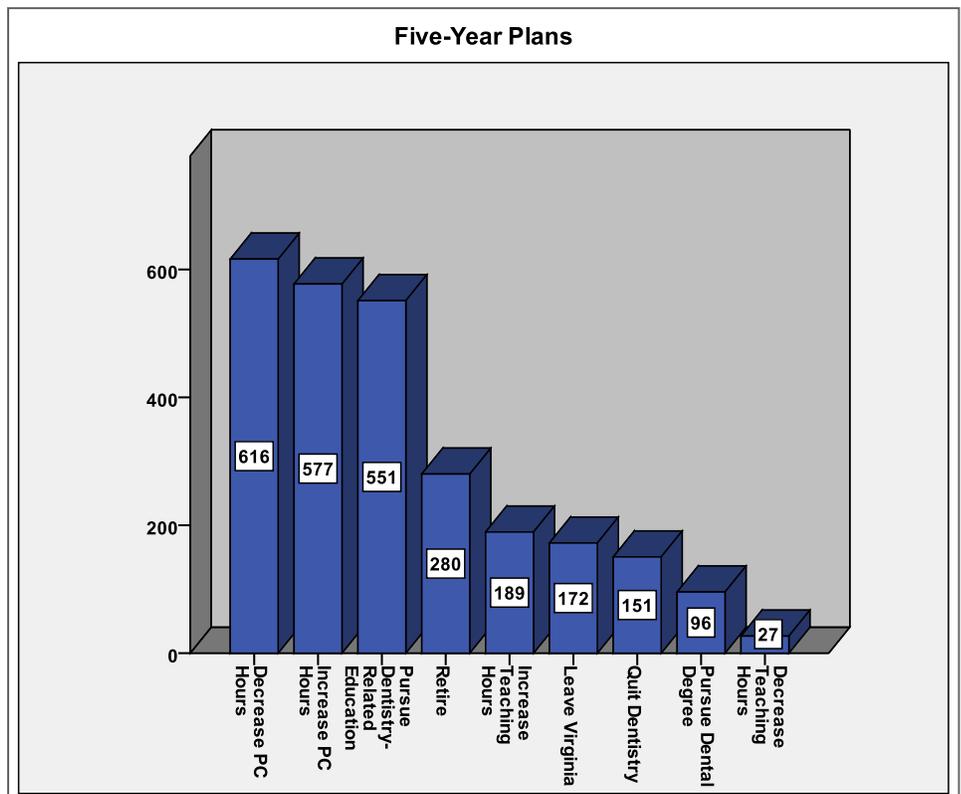
## Retirement Plans

By comparing the retirement expectations of dental hygienists to their actual age, we can estimate how many dental hygienists plan to retire within a certain time period. In total, only five percent of dental hygienists expected to retire within the next five years. In addition, only one percent of dental hygienists expect to retire within the next two years.

|                                  | Weighted Estimate | %     | Cumulative % |
|----------------------------------|-------------------|-------|--------------|
| Within 2 Years                   | 27                | 0.9%  | 0.9%         |
| Within 3 -5 Years                | 268               | 8.6%  | 9.5%         |
| Within 6 -10 Years               | 296               | 9.5%  | 19.0%        |
| Within 7-14 Years                | 370               | 11.9% | 30.9%        |
| Within 11-19 Years               | 468               | 15.1% | 46.0%        |
| Within 16-25 Years               | 460               | 14.8% | 60.8%        |
| Within 21-30 Years               | 427               | 13.8% | 74.6%        |
| Within 26-35 Years               | 341               | 11.0% | 85.6%        |
| Within 31-40 Years               | 284               | 9.1%  | 94.7%        |
| Within 36-45 Years               | 128               | 4.1%  | 98.9%        |
| Within 41-50 Years               | 20                | 0.7%  | 99.5%        |
| Within 46-55 Years               | 10                | 0.3%  | 99.8%        |
| Within 51-60 Years               | 5                 | 0.2%  | 100.0%       |
| Total                            | 3104              | 100%  |              |
| Missing/Do not expect to retire. | 993               |       |              |
| Total                            | 4,098             |       |              |

## Five-year Plans

Of all dental hygienists, 2,097 – slightly more than half – provided career plans for the next five years. Note that dental hygienists could provide more than one answer to this question. Nearly 30 percent of dental hygienists expected to decrease their patient care hours over the next five years; this was the most common response of all possible answers in the survey. However, nearly 28 percent of dental hygienists planned on increasing their patient care hours over the same time period. Meanwhile, more than one-quarter of dental hygienists planned on furthering their education in the next five years, and nearly five percent planned on obtaining a dental degree.

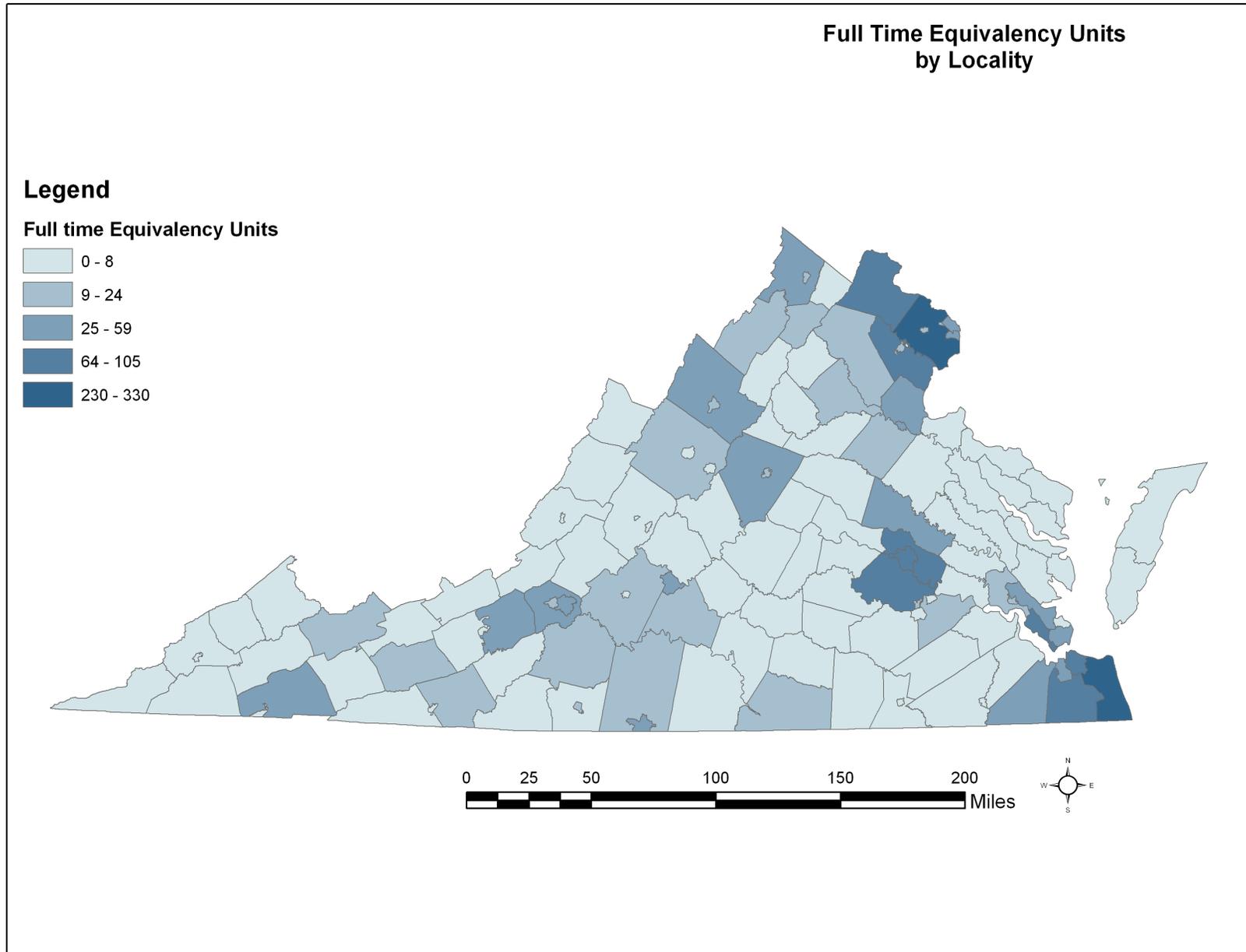


## Plans to Enter Virginia's Dental Hygienist Workforce

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A total of 30 licensed dental hygienists currently NOT in Virginia's workforce planned to return to Virginia's workforce, including 13 who planned to return within the next year. These figures include only licensed dental hygienists whose mailing address is not in Virginia and thus were not included in Virginia's dental hygienist workforce for the survey period.

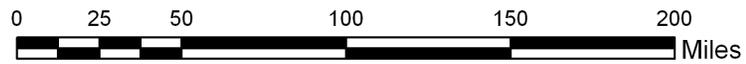
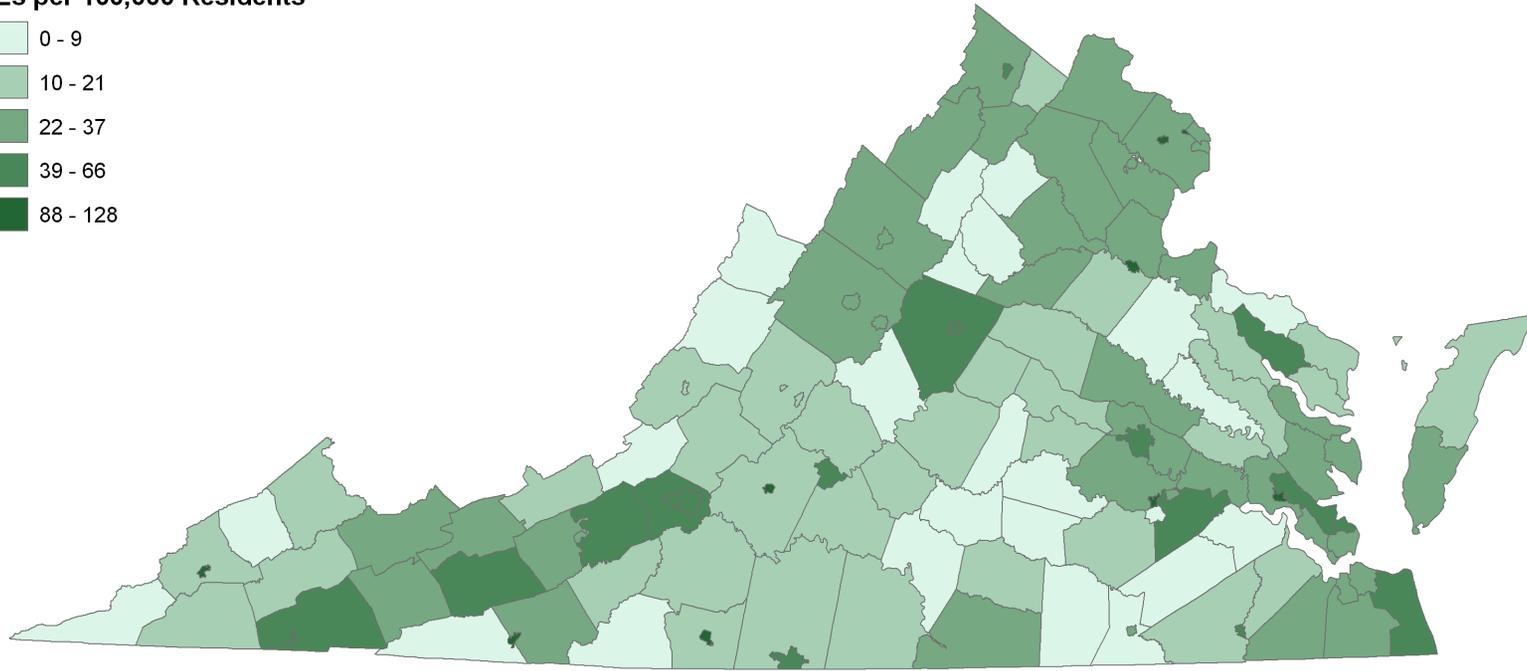
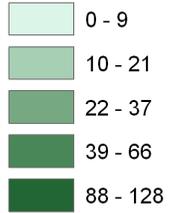
| Plans to Return           | Weighted Estimate |
|---------------------------|-------------------|
| Within 1 year             | 13                |
| Within 1-2 years          | 0                 |
| Within 3-5 years          | 4                 |
| In more than 5 years      | 1                 |
| Yes, but do not know when | 12                |
| <b>Total</b>              | <b>30</b>         |



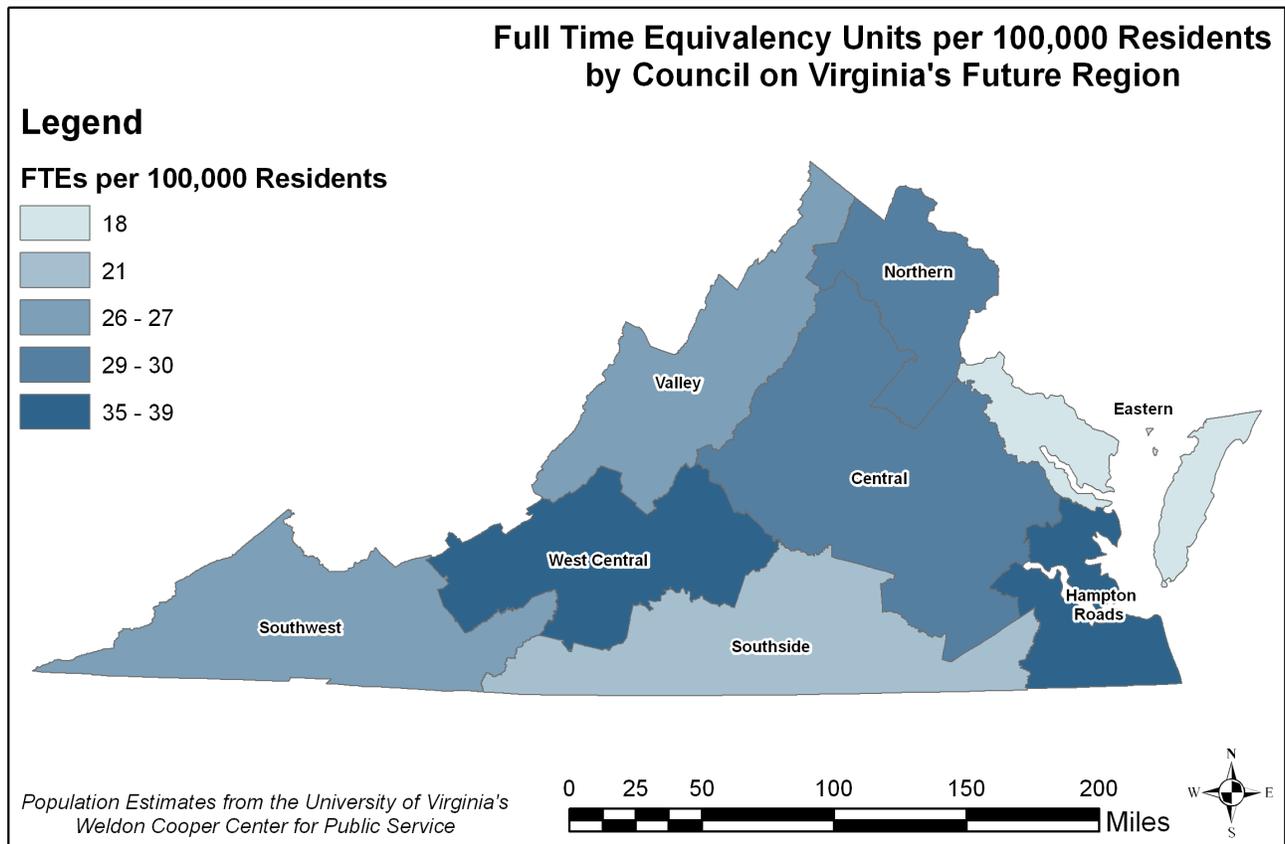
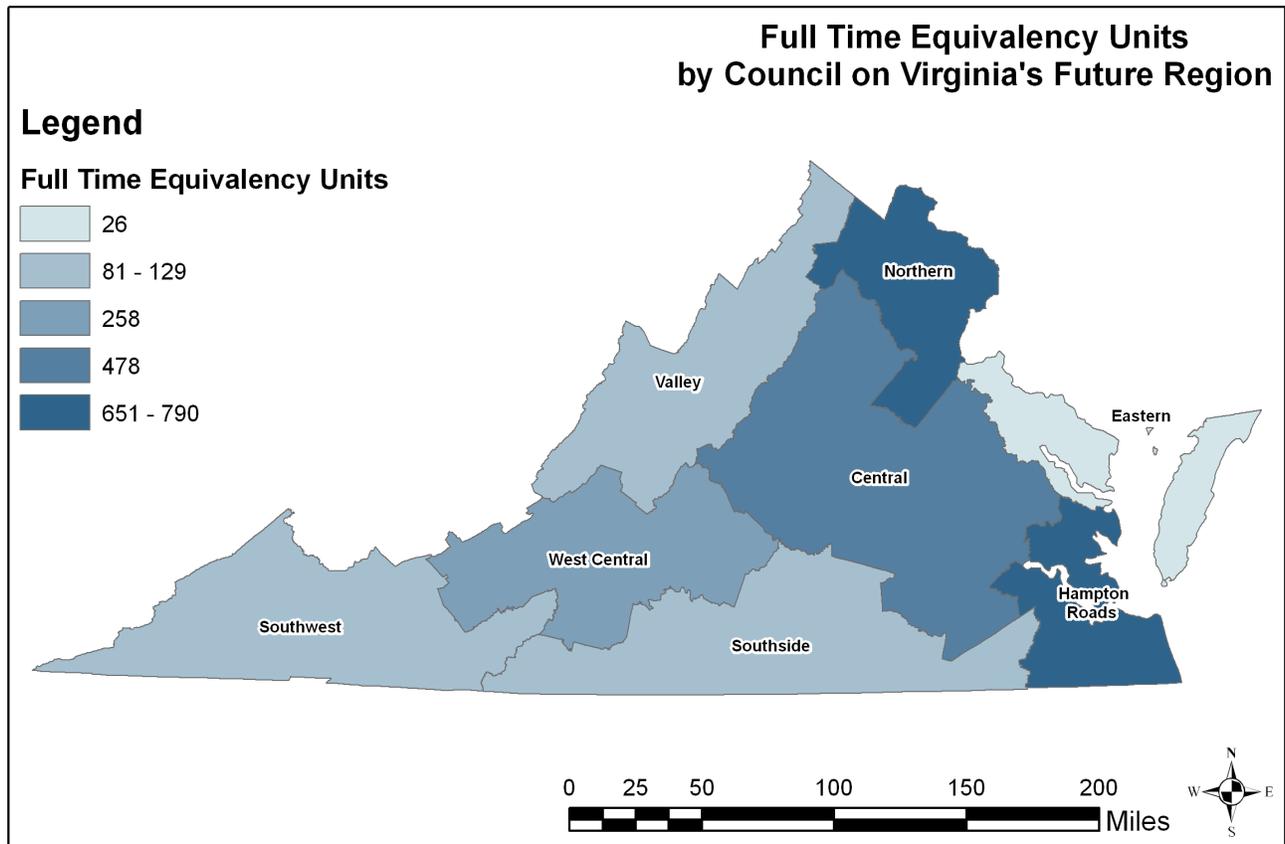
# Full Time Equivalency Units per 100,000 Residents by Locality

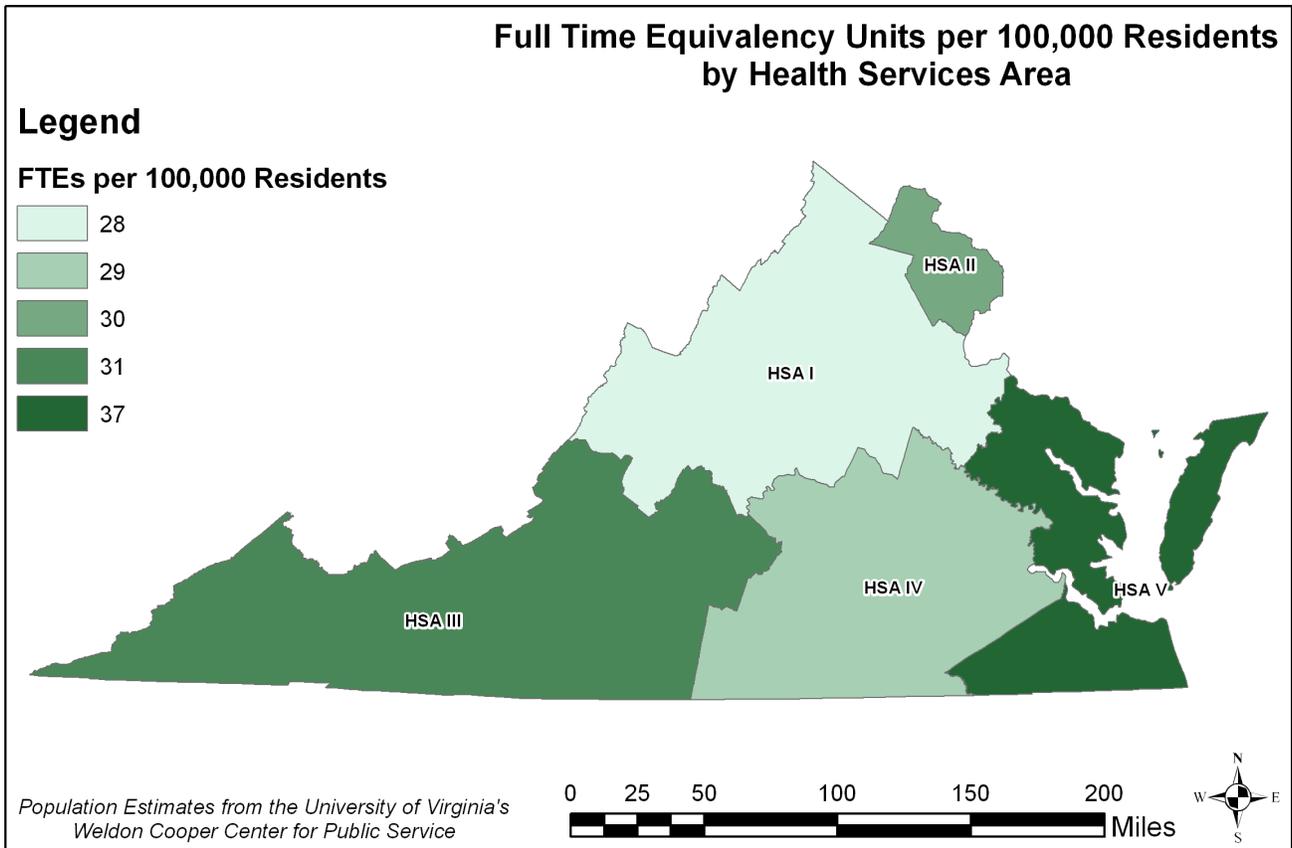
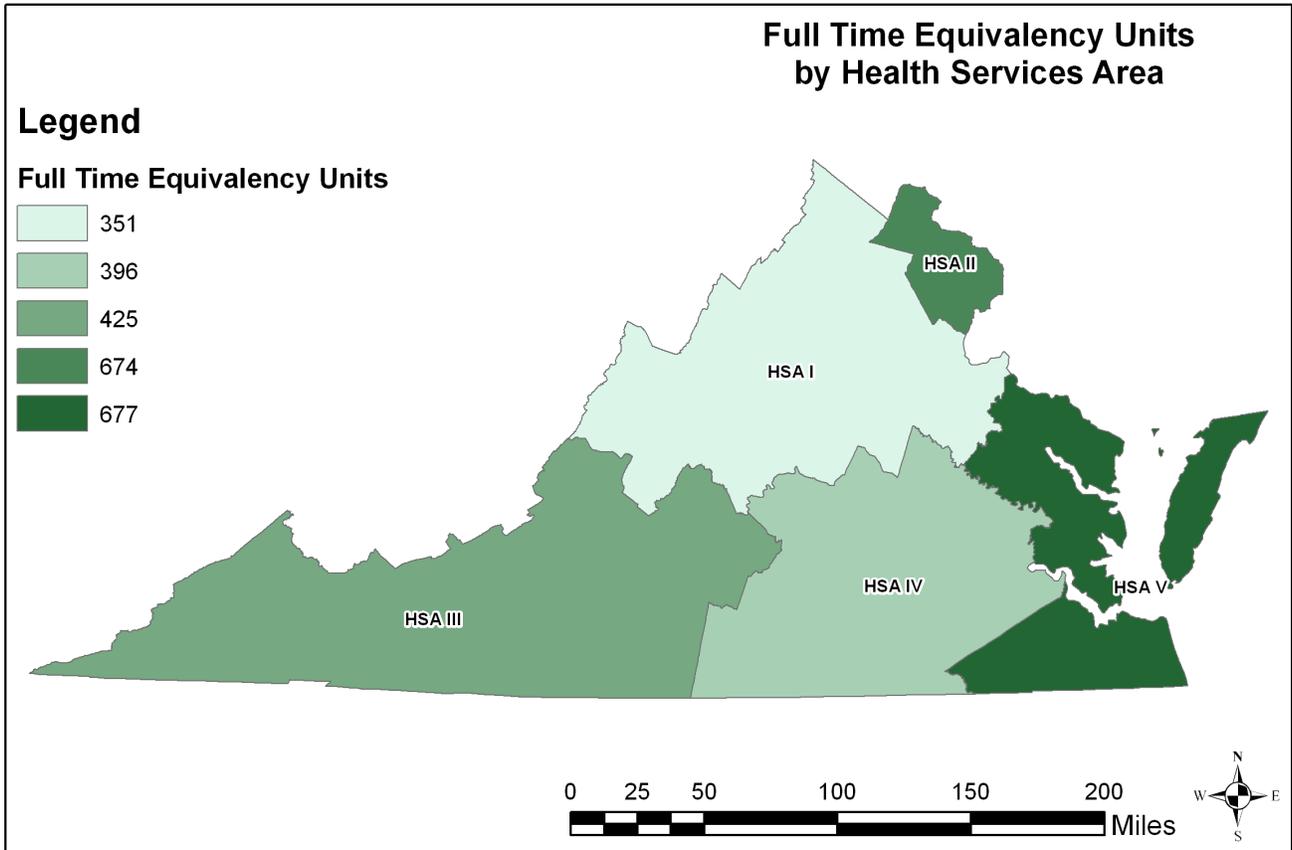
## Legend

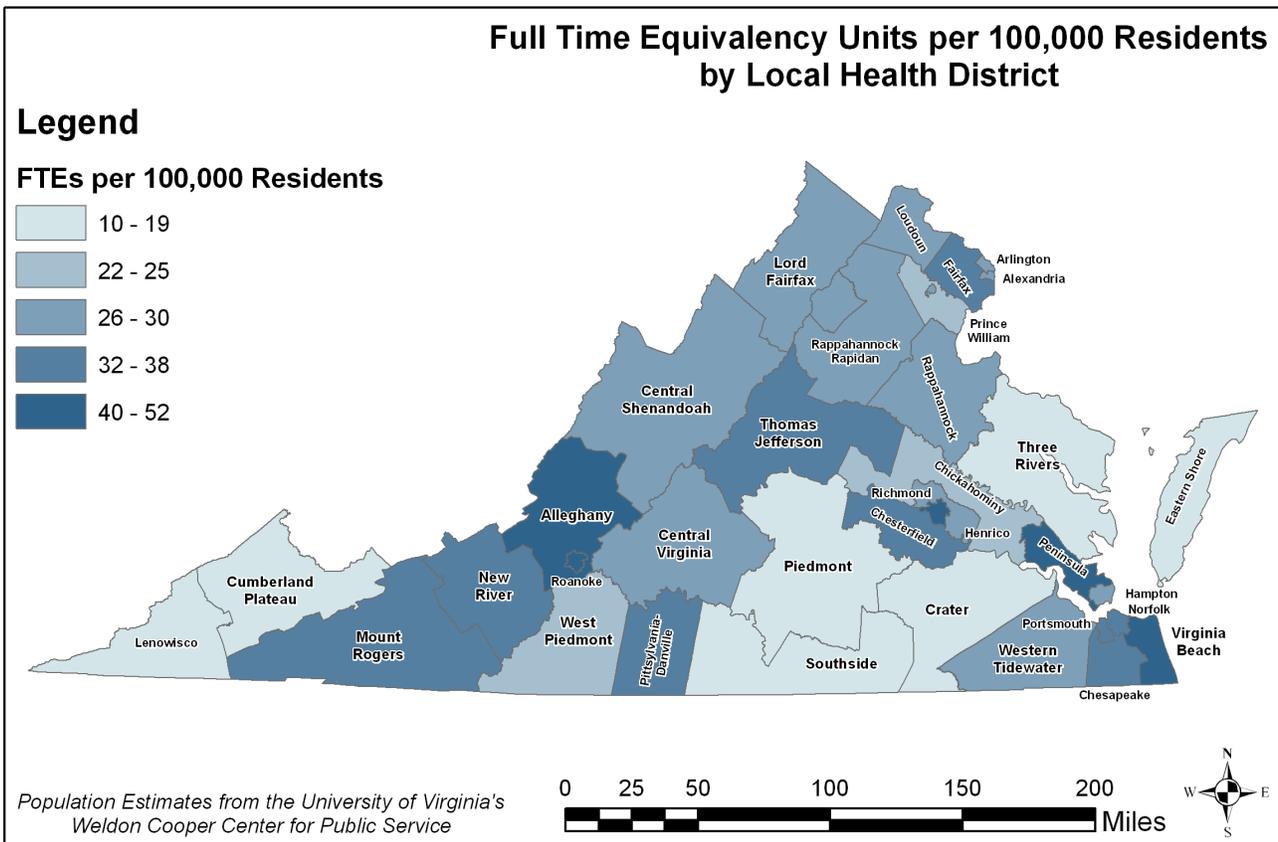
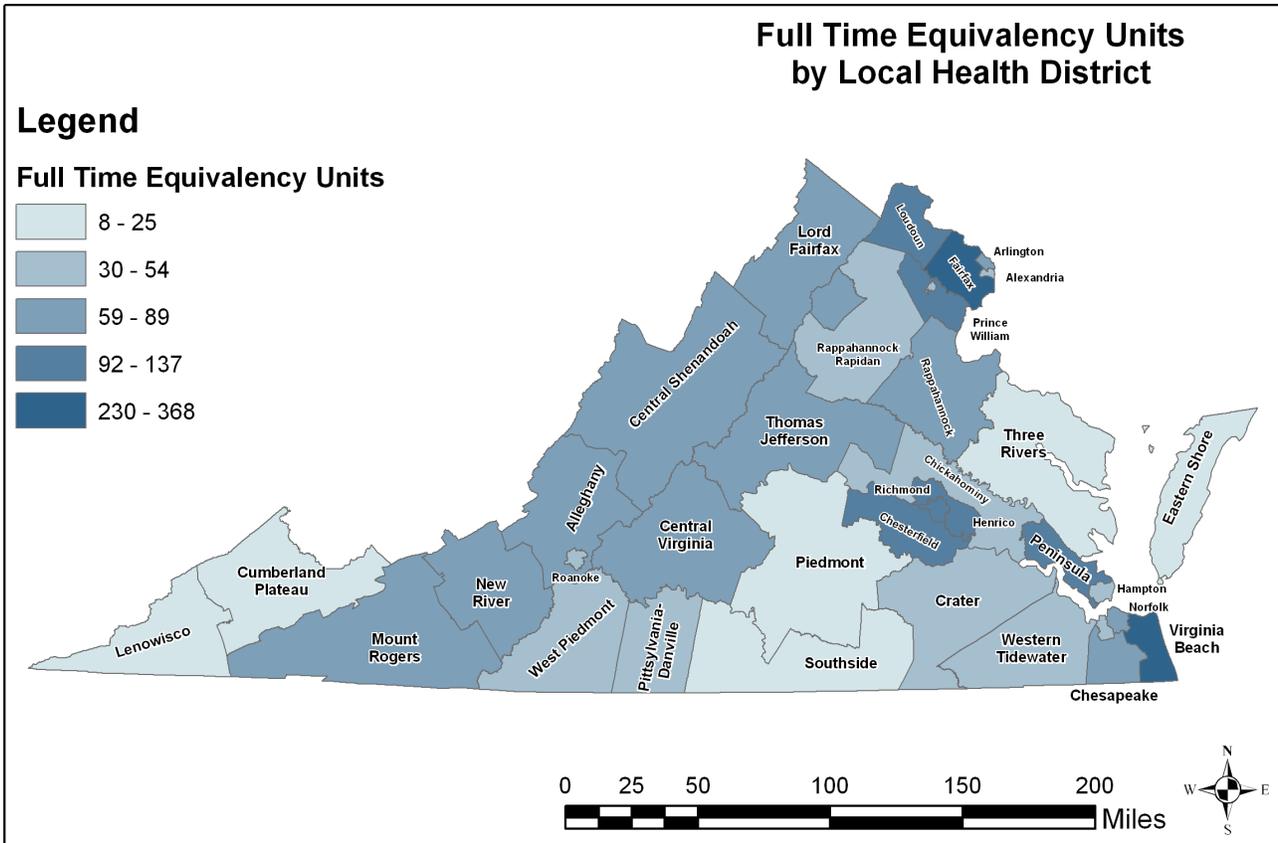
### FTEs per 100,000 Residents

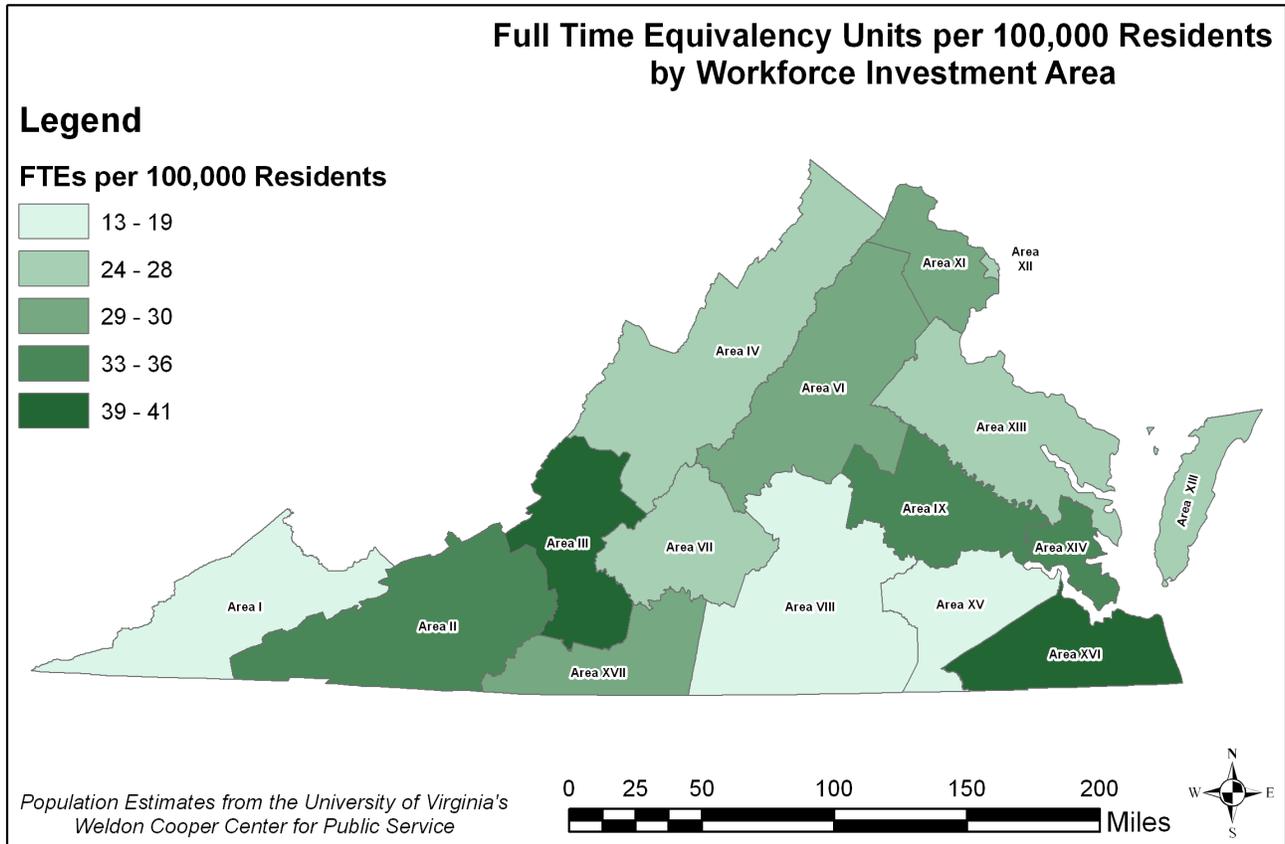
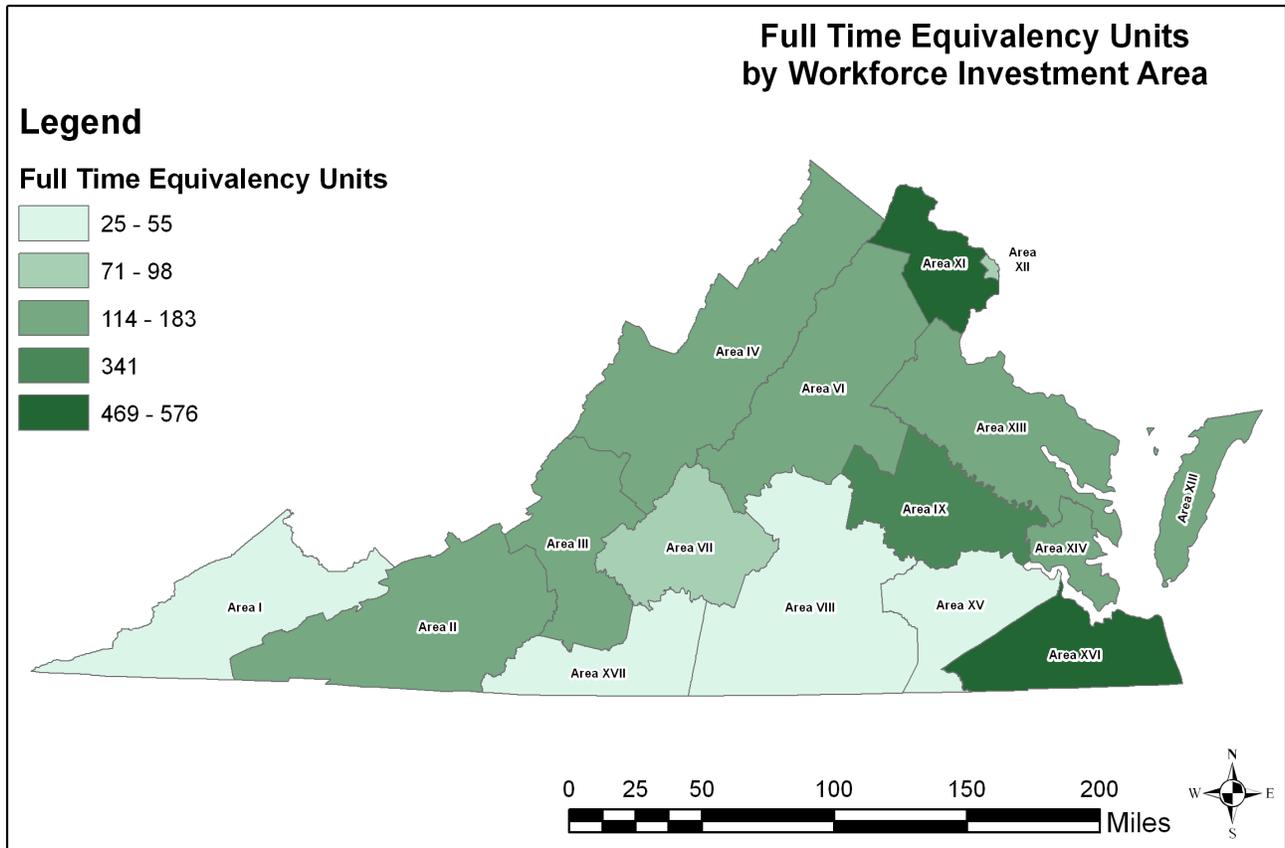


*Population Estimates from the University of Virginia's  
Weldon Cooper Center for Public Service*









## Appendices

### Appendix A: Weights

Final weights were calculated by multiplying the two weights and the overall response rate:  $\text{ageweight} \times \text{ruralweight} \times \text{responserate} = \text{final weight}$ .

For most dentists and dental hygienists, age was derived from the Board of Dentistry’s administrative records. For the entire data set, which included both dentists and dental hygienists, date of birth was missing for 1,145 individuals. For these individuals, ages were estimated by using survey responses. This reduced the number of missing or invalid cases to 343 among both professions. For these individuals, the initial issue year of the Virginia license was used to estimate respondent age. For these dental hygienists, they were assumed to have been 27 years of age when they received their initial license (the average among dental hygienists in the data set). Even after using the “IssYear” variable, there were two individuals in the dataset who did not have the necessary information to estimate an age. For these individuals, the median age of the entire survey was used.

Note: None of Virginia’s localities are categorized as rural status “Urban pop 20,000+, nonadj”.

| Age         | Response Rate | Weight   |
|-------------|---------------|----------|
| Under 30    | 87%           | 1.147541 |
| 30 to 34    | 88%           | 1.141343 |
| 35 to 39    | 86%           | 1.159592 |
| 40 to 44    | 88%           | 1.132283 |
| 45 to 49    | 86%           | 1.165017 |
| 50 to 54    | 84%           | 1.185764 |
| 55 to 59    | 86%           | 1.162393 |
| 60 to 64    | 73%           | 1.369863 |
| 65 to 69    | 65%           | 1.542857 |
| 70 and Over | 54%           | 1.863636 |

| Rural Status                       | Response Rate | Weight   |
|------------------------------------|---------------|----------|
| Metro, 1 million+                  | 86%           | 1.166605 |
| Metro, 250,000 to 1 million        | 89%           | 1.127273 |
| Metro, 250,000 or less             | 90%           | 1.114486 |
| Urban pop 20,000+, Metro adj       | 91%           | 1.098765 |
| Urban pop 20,000+, nonadj          | N/A           | N/A      |
| Urban pop, 2,500-19,999, Metro adj | 89%           | 1.122066 |
| Urban pop, 2,500-19,999, nonadj    | 88%           | 1.140000 |
| Rural, Metro adj                   | 87%           | 1.152542 |
| Rural, nonadj                      | 87%           | 1.153846 |
| Virginia border state/DC           | 80%           | 1.251462 |
| Other US State                     | 76%           | 1.308642 |

## Appendix B: Hours Worked Imputation

As with all surveys, and particularly online surveys, our responses suffered from some item-missing data. The extent of the missing data appears in the tables on this page. To get a more complete look at the dental hygienist labor supply, we imputed missing data on the hours worked and weeks worked variables for each location. Although these changes had little impact on aggregate descriptive estimates (See tables, next page), they may have a large effect on estimates when examining small groups (e.g., estimates for rural counties.)

We imputed data using a two-step process. First, we imputed weighted group means for groups of dental hygienists related on three key variables: age, metro-status of the location and total number of locations. The location, and thus the metro status of the location, was sometimes missing itself, resulting in a separate group. Additionally, locations outside of Virginia were also treated as a separate group. Second, we recoded the imputed means into an existing response. In the case of weeks, we rounded to the nearest integer week. (Note: 20 or fewer weeks are aggregated in the table only. The data is precise to the week). In the case of hours, we used our existing censored ranges. Decimals were truncated.

| Ave. Hours per Week Worked     | Primary Location  |             | Secondary Location |             |
|--------------------------------|-------------------|-------------|--------------------|-------------|
|                                | Weighted Estimate | %           | Weighted Estimate  | %           |
| 1 to 9 hours                   | 190               | 5%          | 404                | 57%         |
| 10 to 19 hours                 | 446               | 12%         | 176                | 25%         |
| 20 to 29 hours                 | 898               | 24%         | 42                 | 6%          |
| 30 to 39 hours                 | 1,818             | 48%         | 39                 | 5%          |
| 40 to 49 hours                 | 342               | 9%          | 13                 | 2%          |
| 50 to 59 hours                 | 21                | 1%          | 0                  | 0%          |
| 60 to 69 hours                 | 12                | 0%          | 0                  | 0%          |
| 70 to 79 hours                 | 20                | 1%          | 1                  | 0%          |
| 80 or more hours               | 8                 | 0%          | 0                  | 0%          |
| <b>Total non-missing</b>       | <b>3,755</b>      | <b>99%</b>  | <b>675</b>         | <b>95%</b>  |
| Missing (excluding ineligible) | 47                | 1%          | 36                 | 5%          |
| <b>Total w/ Location</b>       | <b>3,802</b>      | <b>100%</b> | <b>711</b>         | <b>100%</b> |
| <b>Ineligible</b>              | <b>296</b>        |             | <b>3,386</b>       |             |

| Weeks Worked                          | Primary Location  |             | Secondary Location |             |
|---------------------------------------|-------------------|-------------|--------------------|-------------|
|                                       | Weighted Estimate | %           | Weighted Estimate  | %           |
| <b>10 weeks or less</b>               | 157               | 4%          | 185                | 26%         |
| <b>11 to 20 weeks</b>                 | 150               | 4%          | 94                 | 13%         |
| 21 weeks                              | 7                 | 0%          | 0                  | 0%          |
| 22 weeks                              | 11                | 0%          | 5                  | 1%          |
| 23 weeks                              | 7                 | 0%          | 7                  | 1%          |
| 24 weeks                              | 52                | 1%          | 24                 | 3%          |
| 25 weeks                              | 27                | 1%          | 9                  | 1%          |
| 26 weeks                              | 35                | 1%          | 15                 | 2%          |
| 27 weeks                              | 11                | 0%          | 2                  | 0%          |
| 28 weeks                              | 24                | 1%          | 6                  | 1%          |
| 29 weeks                              | 17                | 0%          | 5                  | 1%          |
| 30 weeks                              | 56                | 1%          | 14                 | 2%          |
| 31 weeks                              | 7                 | 0%          | 1                  | 0%          |
| 32 weeks                              | 33                | 1%          | 8                  | 1%          |
| 33 weeks                              | 3                 | 0%          | 4                  | 1%          |
| 34 weeks                              | 8                 | 0%          | 1                  | 0%          |
| 35 weeks                              | 22                | 1%          | 8                  | 1%          |
| 36 weeks                              | 39                | 1%          | 8                  | 1%          |
| 37 weeks                              | 11                | 0%          | 0                  | 0%          |
| 38 weeks                              | 26                | 1%          | 3                  | 0%          |
| 39 weeks                              | 9                 | 0%          | 1                  | 0%          |
| 40 weeks                              | 127               | 3%          | 22                 | 3%          |
| 41 weeks                              | 8                 | 0%          | 1                  | 0%          |
| 42 weeks                              | 42                | 1%          | 9                  | 1%          |
| 43 weeks                              | 17                | 0%          | 3                  | 0%          |
| 44 weeks                              | 39                | 1%          | 6                  | 1%          |
| 45 weeks                              | 73                | 2%          | 14                 | 2%          |
| 46 weeks                              | 94                | 2%          | 10                 | 1%          |
| 47 weeks                              | 74                | 2%          | 3                  | 0%          |
| 48 weeks                              | 429               | 11%         | 34                 | 5%          |
| 49 weeks                              | 384               | 10%         | 22                 | 3%          |
| 50 weeks                              | 817               | 21%         | 73                 | 10%         |
| 51 weeks                              | 161               | 4%          | 9                  | 1%          |
| 52 weeks                              | 753               | 20%         | 67                 | 9%          |
| <b>Total</b>                          | <b>3,730</b>      | <b>98%</b>  | <b>0</b>           | <b>95%</b>  |
| <b>Missing (excluding ineligible)</b> | <b>72</b>         | <b>2%</b>   | <b>37</b>          | <b>5%</b>   |
| <b>Total w/ Location</b>              | <b>3,802</b>      | <b>100%</b> | <b>712</b>         | <b>100%</b> |
| <b>Ineligible</b>                     | <b>296</b>        |             | <b>3,386</b>       |             |

There are limitations inherent in this method. Two are related to the use of censored intervals for continuous data for hours worked. The first weakness is that we assign the center of the category as the numeric value for each interval. This assumes actual hours worked are symmetrically distributed within the categories. In reality, hours are likely distributed on a curve (e.g., more people likely worked closer to 50 hours per week than 59 hours per week in the “50 to 59 hours” category). The second is we could not use parametric statistical tests to measure correlation. Rather, we used Spearman rank-order correlation to determine correlation to confirm relationships. Some of the correlations found were weak (see table next page). Additionally, there are significant correlations between the imputed variables themselves. The HWDC is researching methods to apply modern multiple imputation methods to its data.

Despite these limitations, the imputation method appears to have only minimal effect on standard indicators. Results for the original variable, the group-mean imputed variable, and the rebinned variable (estimates) appear below:

**Table 1: Indicators of the effects of imputation, Primary Location.**

|                        | Primary Weeks Worked | SMEAN (PriWeeks) | Primary Weeks, Estimated | Primary Average Hours | SMEAN(PriHours) | Primary Hours, Estimated |
|------------------------|----------------------|------------------|--------------------------|-----------------------|-----------------|--------------------------|
| Valid                  | 3729                 | 3802             | 3802                     | 3754                  | 3802            | 3802                     |
| Missing                | 369                  | 296              | 296                      | 344                   | 296             | 296                      |
| Mean                   | 43.87                | 43.855           | 43.85                    | 30.16                 | 30.159          | 30.17                    |
| Std. Error of Mean     | .200                 | .1960            | .196                     | .180                  | .1777           | .178                     |
| Median                 | 49.00                | 49.00            | 49.00                    | 35.00                 | 35.00           | 35.00                    |
| Std. Deviation         | 12.184               | 12.0880          | 12.087                   | 11.022                | 10.9582         | 10.969                   |
| Variance               | 148.452              | 146.119          | 146.107                  | 121.480               | 120.082         | 120.330                  |
| Skewness               | -1.990               | -1.997           | -1.997                   | .115                  | .114            | .110                     |
| Std. Error of Skewness | .040                 | .040             | .040                     | .040                  | .040            | .040                     |
| Kurtosis               | 3.012                | 3.082            | 3.081                    | 2.353                 | 2.411           | 2.389                    |
| Std. Error of Kurtosis | .080                 | .079             | .079                     | .080                  | .079            | .079                     |
| Sum                    | 163601               | 166721.3         | 166714                   | 113215                | 114653.9        | 114711                   |
| Percentiles            |                      |                  |                          |                       |                 |                          |
| 25                     | 44.00                | 44.00            | 44.00                    | 25.00                 | 25.00           | 25.00                    |
| 50                     | 49.00                | 49.00            | 49.00                    | 35.00                 | 35.00           | 35.00                    |
| 75                     | 50.00                | 50.00            | 50.00                    | 35.00                 | 35.00           | 35.00                    |

**Table 2: Indicators of the effects of imputation, Secondary Location.**

|                        | Secondary Weeks Worked | SMEAN (SecWeeks) | Secondary Weeks, Estimate | Secondary Average Hours | SMEAN (SecHours) | Secondary Hours, Estimated |
|------------------------|------------------------|------------------|---------------------------|-------------------------|------------------|----------------------------|
| Valid                  | 675                    | 706              | 706                       | 675                     | 706              | 706                        |
| Missing                | 3423                   | 3391             | 3391                      | 3423                    | 3391             | 3391                       |
| Mean                   | 28.37                  | 28.552           | 28.55                     | 11.45                   | 11.6             | 11.61                      |
| Std. Error of Mean     | .719                   | 0.6934           | 0.693                     | 0.384                   | 0.3764           | 0.378                      |
| Median                 | 26.00                  | 28               | 28                        | 5                       | 5                | 5                          |
| Std. Deviation         | 18.677                 | 18.4288          | 18.43                     | 9.983                   | 10.0049          | 10.036                     |
| Variance               | 348.813                | 339.62           | 339.656                   | 99.653                  | 100.098          | 100.71                     |
| Skewness               | -.064                  | -0.084           | -0.085                    | 1.905                   | 1.865            | 1.845                      |
| Std. Error of Skewness | .094                   | 0.092            | 0.092                     | 0.094                   | 0.092            | 0.092                      |
| Kurtosis               | -1.584                 | -1.547           | -1.547                    | 4.213                   | 3.958            | 3.872                      |
| Std. Error of Kurtosis | .188                   | 0.184            | 0.184                     | 0.188                   | 0.184            | 0.184                      |
| Sum                    | 19142                  | 20169.3          | 20171                     | 7729                    | 8194             | 8200                       |
| Percentiles            |                        |                  |                           |                         |                  |                            |
| 25                     | 10                     | 10               | 5                         | 5                       | 5                | 5.00                       |
| 50                     | 28                     | 28               | 5                         | 5                       | 5                | 5.00                       |
| 75                     | 48                     | 48               | 15                        | 15                      | 15               | 15.00                      |

**Table 3: Correlations.**

|                | Spearman's rho          | Location Count | Primary Average Hours | Primary Weeks Worked | Secondary Average Hours | Secondary Weeks Worked |
|----------------|-------------------------|----------------|-----------------------|----------------------|-------------------------|------------------------|
| Age 5 yr       | Correlation Coefficient | -.023          | -.126**               | .098**               | -.061                   | .178**                 |
|                | Sig. (2-tailed)         | .169           | .000                  | .000                 | .138                    | .000                   |
|                | N                       | 3592           | 3296                  | 3274                 | 593                     | 593                    |
| Location Count | Correlation Coefficient | 1.00           | -.175**               | -.089**              | -.050                   | -.134**                |
|                | Sig. (2-tailed)         | .              | .000                  | .000                 | .224                    | .001                   |
|                | N                       | 3592           | 3296                  | 3274                 | 593                     | 593                    |

Appendix C: The 2012 Dental Hygienists Workforce Survey

| Question  | Choice                                 |
|---|--|
| <b>Education and Background</b>   |  |
| 1) Year of Birth:   | 1996 to 1920                           |
| 2) Sex:   | Male                                   |
|   | Female                                 |
| Please select the items that best describe your race/ethnicity. Please answer both question 3a about Hispanic origin and 3b about race/ethnicity. |  |
| 3a) Select one:   | Hispanic, Latino or Spanish Origin     |
|   | Not Hispanic, Latino or Spanish Origin |
|   | Prefer not to respond                  |
| 3b) Select all that apply:  | White                                  |
|   | Black or African American              |
|   | American Indian or Alaska Native       |
|   | Asian                                  |
|   | Native Hawaiian or Pacific Islander    |
|   | Some other race                        |
|   | Prefer not to respond                  |
| 3c) If some other race, please specify:   | FILL IN THE BLANK                      |
| 4) Where did you graduate high school (Secondary School)?   | Outside Of The U.S. or Canada          |
|   | Canada                                 |
|   | List of US States and Territories      |
| 5) Was your childhood spent mostly in rural, urban or suburban areas?   | Urban                                  |
|   | Rural                                  |
|   | Suburban                               |
| 6) Where did you complete your undergraduate degree?  | Did not obtain an undergraduate degree |
|   | Outside of the US or Canada            |
|   | Canada                                 |
|   | List of US States and Territories      |
| 7) Where did you obtain your initial certificate/degree in dental hygiene?  | Outside of the US or Canada            |
|   | Canada                                 |
|   | List of US States and Territories      |
| 8) Do you hold a license to practice dental hygiene in any other jurisdiction?<br>Please check all that apply:                                    | Maryland                               |
|   | West Virginia                          |
|   | Kentucky                               |

|  |   |
|--|---|
|  | Tennessee   |
|  | North Carolina                                      |
|  | District of Columbia                                |
|  | One or more other US states                         |
| 9) Please indicate the highest level of education you have completed as of today:  | Certificate   |
|  | Associate Degree                                    |
|  | Bachelor Degree                                     |
|  | Post Graduate Certificate                           |
|  | Masters Degree                                      |
|  | Doctorate   |
| 10) Which choice best describes your primary role in dental hygiene?   | Private Practice                                    |
|  | Public oral health/government practice              |
|  | Military Dental Hygiene                             |
|  | Researcher  |
|  | Academic Faculty                                    |
|  | Administrator                                       |
|  | Volunteer/Non-profit oral health                    |
|  | Retired   |
|  | Inactive  |
|  | Other   |
| 10a) If other, please provide a one or two word description:   | FILL IN THE BLANK                                   |
| 11) Within the past 12 months, have you practiced, taught, volunteered or otherwise worked in a Dental Hygiene-related position? (if only occasional practice--less than 100 hrs--please select "No") Please note: Answer "yes" for any Dental Hygiene related activities, including administrative, educational, regulatory or other activities. If you answered "No" to Question 11, please go to Question 30. If you answered "Yes", please continue.   | YES/NO  |
| <b>Primary Work Location</b>   |   |
| Question 12 through Question 17 refers to your primary place of employment, work or practice. This is the place where you spend the most work hours during an average workweek, or where you spent the most weeks working in the past 12 months. These questions describe a particular work location, not an employer. Temporary or traveling workers who spend or spent a significant amount of time at a particular location should use that location as his or her primary work location. Persons who consistently work in multiple locations (i.e. temporary workers, locum tenens) should indicate this in Question 12. |   |
| 12) Please select the location of your primary place of employment, work or practice:  | Outside of US                                       |
|  | Virginia Border State/DC                            |
|  | Other US State                                      |
|  | List of Virginia Counties and Independent Cities    |
|  | Several localities (temporary, mobile clinic, etc.) |

|   |                                    |
|---|------------------------------------|
| 13) Approximate number of weeks at which at least some time was spent at this work location within the past twelve months (exclude vacation, medical leave, etc): | 1 week to 52 weeks                 |
| 14a) How many hours do you (or did you) work in an average workweek at this location?   | 1 to 9 hours                       |
|   | 10 to 19 hours                     |
|   | 20 to 29 hours                     |
|   | 30 to 39 hours                     |
|   | 40 to 49 hours                     |
|   | 50 to 59 hours                     |
|   | 60 to 69 hours                     |
|   | 70 to 79 hours<br>80 or more hours |
| 14b) On average, what proportion of your workweek is (was) spent on administrative or business-related matters?   | None                               |
|   | 1% to 9%                           |
|   | 10% to 19%                         |
|   | 20% to 29%                         |
|   | 30% to 39%                         |
|   | 40% to 49%                         |
|   | 50% to 59 %                        |
|   | 60% to 69%                         |
|   | 70% to 79%                         |
|   | 80% to 89%                         |
|   | 90% to 99%<br>100%                 |
| 14c) On average, what proportion of your workweek is (was) spent performing research?   | None                               |
|   | 1% to 9%                           |
|   | 10% to 19%                         |
|   | 20% to 29%                         |
|   | 30% to 39%                         |
|   | 40% to 49%                         |
|   | 50% to 59 %                        |
|   | 60% to 69%                         |
|   | 70% to 79%                         |
|   | 80% to 89%                         |
|   | 90% to 99%<br>100%                 |
| 14d) On average, what proportion of your workweek is (was) spent teaching dental or dental hygiene students?  | None                               |
|   | 1% to 9%                           |
|   | 10% to 19%                         |
|   | 20% to 29%                         |
|   | 30% to 39%                         |
|   | 40% to 49%                         |
|   | 50% to 59 %<br>60% to 69%          |

|   |   |
|---|---|
|   | 70% to 79%  |
|   | 80% to 89%  |
|   | 90% to 99%  |
|   | 100%  |
| 14e) On average, what proportion of your workweek is (was) spent on patient care (including patient education)? | None  |
|   | 1% to 9%  |
|   | 10% to 19%  |
|   | 20% to 29%  |
|   | 30% to 39%  |
|   | 40% to 49%  |
|   | 50% to 59 %                                       |
|   | 60% to 69%  |
|   | 70% to 79%  |
|   | 80% to 89%  |
|   | 90% to 99%  |
|   | 100%  |
| 15) Average number of patient care visits you conduct(ed) at this location per week:                            | None  |
|   | 1 to 24   |
|   | 25 to 49  |
|   | 50 to 74  |
|   | 75 to 99  |
|   | 100 to 124  |
|   | 125 to 149  |
|   | 150 to 174  |
|   | 175 to 199  |
|   | 200 or more                                       |
| 16a) Please select the type of practice setting:  | Private Solo Practice                             |
|   | Private Group Practice                            |
|   | Hospital/Health System                            |
|   | Nursing home/long term care facility              |
|   | Non-profit/safety net clinic                      |
|   | Federal Government Service (Military/Peace Corps) |
|   | Local/State Government Agency                     |
|   | K-12 school or non-dental college                 |
|   | Dental/Dental Hygiene School                      |
|   | Insurance Company                                 |
|   | Supplier Company                                  |
|   | Other   |
| 16b) If you selected "other" please provide a one or two word description:                                      | FILL IN THE BLANK                                 |

|  |   |
|--|---|
| 17) Please indicate how you are reimbursed for patient care activities at this location. Please check all that apply: If you only have one practice location, please skip to question 25. If you have additional practice locations, please continue.  | Private Insurer                                     |
|  | Capitation/Subscription or group-model HMO          |
|  | Self-pay (full)                                     |
|  | Sliding Scale                                       |
|  | Medicaid/FAMIS                                      |
|  | Unreimbursed  |
|  | Salary/wage   |
| Other  |   |
| <b>Secondary Work Location</b>   |   |
| Question 18 through Question 23 refers to your secondary place of employment, work or practice. This is the place where you spend the second most work hours during an average workweek, or where you spent the second most weeks working in the past 12 months. These questions describe a particular work location, not an employer. Temporary or traveling workers who spend or spent a significant amount of time at a second location should use that location as his or her secondary work location. Persons with a primary work location who also consistently work in multiple locations (i.e. temporary workers, locum tenens) should indicate this in Question 18. |   |
| 18) Please select the location of your secondary place of employment, work or practice:  | Outside of US                                       |
|  | Virginia Border State/DC                            |
|  | Other US State                                      |
|  | List of US Counties and Independent Cities          |
|  | Several localities (temporary, mobile clinic, etc.) |
| 19) Approximate number of weeks at which at least some time was spent at this work location within the past twelve months (exclude vacation, medical leave, etc):  | 1 week to 52 Weeks                                  |
| 20a) How many hours do you (or did you) work in an average workweek at this location?  | 1 to 9 hours  |
|  | 10 to 19 hours                                      |
|  | 20 to 29 hours                                      |
|  | 30 to 39 hours                                      |
|  | 40 to 49 hours                                      |
|  | 50 to 59 hours                                      |
|  | 60 to 69 hours                                      |
|  | 70 to 79 hours                                      |
| 80 or more hours   |   |
| 20b) On average, what proportion of your workweek is (was) spent on administrative or business-related matters?  | None  |
|  | 1% to 9%  |
|  | 10% to 19%  |
|  | 20% to 29%  |
|  | 30% to 39%  |
|  | 40% to 49%  |
|  | 50% to 59 %   |
| 60% to 69%   |   |

|   |             |
|---|-------------|
|   | 70% to 79%  |
|   | 80% to 89%  |
|   | 90% to 99%  |
|   | 100%        |
| 20c) On average, what proportion of your workweek is (was) spent performing research?                           | None        |
|   | 1% to 9%    |
|   | 10% to 19%  |
|   | 20% to 29%  |
|   | 30% to 39%  |
|   | 40% to 49%  |
|   | 50% to 59 % |
|   | 60% to 69%  |
|   | 70% to 79%  |
|   | 80% to 89%  |
|   | 90% to 99%  |
|   | 100%        |
| 20d) On average, what proportion of your workweek is (was) spent teaching dental or dental hygiene students?    | None        |
|   | 1% to 9%    |
|   | 10% to 19%  |
|   | 20% to 29%  |
|   | 30% to 39%  |
|   | 40% to 49%  |
|   | 50% to 59 % |
|   | 60% to 69%  |
|   | 70% to 79%  |
|   | 80% to 89%  |
|   | 90% to 99%  |
|   | 100%        |
| 20e) On average, what proportion of your workweek is (was) spent on patient care (including patient education)? | None        |
|   | 1% to 9%    |
|   | 10% to 19%  |
|   | 20% to 29%  |
|   | 30% to 39%  |
|   | 40% to 49%  |
|   | 50% to 59 % |
|   | 60% to 69%  |
|   | 70% to 79%  |
|   | 80% to 89%  |
|   | 90% to 99%  |
|   | 100%        |
| 21) Average number of patient care visits you conduct(ed) at this location per week:                            | None        |
|   | 1 to 24     |
|   | 25 to 49    |

|   |   |
|---|---|
|   | 50 to 74  |
|   | 75 to 99  |
|   | 100 to 124  |
|   | 125 to 149  |
|   | 150 to 174  |
|   | 175 to 199  |
|   | 200 or more                                       |
| 22a) Please select the type of practice setting:  | Private Solo Practice                             |
|   | Private Group Practice                            |
|   | Hospital/Health System                            |
|   | Nursing home/long term care facility              |
|   | Non-profit/safety net clinic                      |
|   | Federal Government Service (Military/Peace Corps) |
|   | Local/State Government Agency                     |
|   | K-12 school or non-dental college                 |
|   | Dental/Dental Hygiene School                      |
|   | Insurance Company                                 |
|   | Supplier Company                                  |
|   | Other   |
| 22b) If you selected "other" please provide a one or two word description:  | FILL IN THE BLANK                                 |
| 23) Please indicate how you are reimbursed for patient care activities at this location. Please check all that apply: | Private Insurer                                   |
|   | Capitation/Subsription or group-model HMO         |
|   | Self-pay (full)                                   |
|   | Sliding Scale                                     |
|   | Medicaid/FAMIS                                    |
|   | Unreimbursed                                      |
|   | Salary/wage                                       |
|   | Other   |
| 24) Average weekly work hours at additional locations in Virginia in the past 12 months:                              | None  |
|   | 1 to 9 hours                                      |
|   | 10 to 19 hours                                    |
|   | 20 to 29 hours                                    |
|   | 30 to 39 hours                                    |
|   | 40 to 49 hours                                    |
|   | 50 to 59 hours                                    |
|   | 60 to 69 hours                                    |
|   | 70 to 79 hours                                    |
|   | 80 or more hours                                  |

| <b>Employment Information</b>  |                       |
|--|-----------------------|
| The Healthcare Workforce Data Center collects compensation information to assess the balance of supply and demand in the state and in localities, and to assist students in planning health careers and choosing specialties. Information from the questions will only be presented in the aggregate. The confidentiality of Information for these and all questions is protected by law. All questions are voluntary. |                       |
| 25) What is your estimated annual net income from dental hygiene or dental hygiene-related activities?   | Volunteer work only   |
|  | \$20,000 or less      |
|  | \$20,001-\$30,000     |
|  | \$30,001-\$40,000     |
|  | \$40,001-\$50,000     |
|  | \$50,001-\$60,000     |
|  | \$60,001-\$70,000     |
|  | \$70,001-\$80,000     |
|  | \$80,001-\$90,000     |
|  | \$90,001-\$100,000    |
|  | \$100,001-\$110,000   |
|  | \$110,001-\$120,000   |
|  | \$120,001-\$130,000   |
|  | \$130,001-\$140,000   |
|  | \$140,000-\$150,000   |
| More than \$150,000  |                       |
| Prefer not to respond  |                       |
| 26) Do you receive the following benefits from any employer? Please check all that apply:  | Paid Sick Leave       |
|  | Paid Vacation         |
|  | Paid Disability Leave |
|  | Health Insurance      |
|  | Dental Insurance      |
|  | None of the above     |
| 27) What is your estimated current educational debt?   | None                  |
|  | \$10,000 or less      |
|  | \$10,001-\$20,000     |
|  | \$20,001-\$30,000     |
|  | \$30,001-\$40,000     |
|  | \$40,001-\$50,000     |
|  | \$50,001-\$60,000     |
|  | \$60,001-\$70,000     |
|  | \$70,001-\$80,000     |
|  | \$80,001-\$90,000     |
|  | \$90,001-\$100,000    |
|  | \$100,001-\$110,000   |
|  | \$110,001-\$120,000   |
| More than \$120,000  |                       |
| Prefer not to respond  |                       |
| 28) At what age do you predict you will retire:  | Under age 50          |

|  |  |
|--|--|
|  | 50 to 54   |
|  | 55 to 59   |
|  | 60 to 64   |
|  | 65 to 69   |
|  | 70 to 74   |
|  | 75 to 79   |
|  | 80 or over   |
|  | I do not intend to retire  |
|  | Prefer not to respond  |
| 29) Within the next five years do you plan to do any of the following? Please check all that apply:  | Retire   |
|  | Cease working in the dental hygiene field                                      |
|  | Continue working in the dental hygiene field, but cease practicing in Virginia |
|  | Increase patient care hours  |
|  | Decrease patient care hours  |
|  | Increase time spent teaching dentistry or dental hygiene                       |
|  | Decrease time spent teaching dentistry or dental hygiene                       |
|  | Pursue additional dental hygiene education                                     |
|  | Pursue a Dental Degree   |
| <b>End of Questionnaire for active Dental Hygienists-Thank you! If you answered "No" to question 11, please continue.</b>                                |  |
| 30) If you did not practice, teach or otherwise work as a dental hygienist within the past twelve months, did/are you. . .? Please check all that apply: | I am retired.  |
|  | Work occasionally for charity/consultation/special patients?                   |
|  | Pursue specialty/dentistry education?  |
|  | Pursue non-dentistry education?  |
|  | Work in another profession or non-dentistry field?                             |
|  | Experience temporary voluntary unemployment (including for medical reasons)?   |
|  | Experience temporary involuntary unemployment?                                 |
|  | None of the above.   |

|  |   |
|--|---|
| 31) Do you provide any volunteer, mentoring or other services in Virginia? If so, approximately how many hours in the past year? | None  |
|  | 1-25 hours  |
|  | 26-50 hours   |
|  | 51-75 hours   |
|  | 76-100 hours  |
| 32) Do you expect to begin working in the dental hygiene profession in Virginia? If so, when?                                    | Not currently planning to practice/work in Virginia |
|  | Plan to practice/work in a volunteer capacity       |
|  | Yes, within the next year                           |
|  | Yes, within 1-2 years                               |
|  | Yes, within 3-5 years                               |
|  | Yes, in more than 5 years                           |
|  | Yes, do not know when                               |
|  |   |
| <b>End of Questionnaire-Thank you!</b>   |   |